MEDICAL LIBRARY

BRITISH MEDICAL JOURNAL

MAR 9 1950

JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

SATURDAY FEBRUARY 18 1950

TABLE OF CONTENTS

Developments in the Field of Health in India
K. C. K. E. RAJA, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., D.P.H. 387

Maternity and the National Health Service JAMES YOUNG, M.D., F.R.C.S., F.R.C.O.G. 392

Psychology of the Surgical Patient ALEXANDER KENNEDY, M.D., F.R.C.P., D.P.M. 396

Concealed Accidental Haemorrhage of Pregnancy DERK CRICHTON, M.B. 401

Post-dysenteric Colitis G. T. STEWART, M.D., D.T.M.&H. 405

Prognosis in Bronchial Asthma DERMOT MCCRACKEN, M.B., M.R.C.P. 409

Low Spinal Analgesia in Operative Obstetrics E. E. RAWLINGS, M.D. 412

Caudal Analgesia T. C. THORNE, M.R.C.S., D.A. 414

MEDICAL MEMORANDA

Experiences with "Diparcol." R. M. GRAY, M.B., B.S. 416

Profuse Haemorrhage from Ruptured Corpus Luteum Simulating an Ectopic Pregnancy. C. J. DEWHURST, M.B., M.R.C.O.G. 416

Rupture of Oesophagus during Childbirth. H. W. H. KENNARD, M.B., B.Chir. 417

REFRESHER COURSE

Acute and Chronic Sinusitis. C. GILL-CAREY, F.R.C.S. 427

GENERAL ARTICLES AND NEWS

Pan-American Doctors' Club. COLONEL P. T. ETHERTON 430

NATIONAL FORMULARY, 1949 431

GLOBULINS AND ANTIBODIES 431

ASSOCIATION OF CLINICAL PATHOLOGISTS 432

GENERAL ELECTION 433

NOVA ET VETERA 434

UNIVERSITIES AND COLLEGES 443

THE SERVICES 443

MEDICAL NEWS 444

BIRTHS, MARRIAGES, AND DEATHS 446

QUESTIONS AND COMMENTS 447

REVIEWS

British Obstetrics 418

The Worker's Eyes 418

Guide to Rh Immunization 418

A French Symposium 419

History of Physiology 419

Reconstructive Surgery 419

Words, Words, Words 420

Books Received 420

LEADING ARTICLES

The Suprarenal Cortex and the Haemopoietic System 421

Health in India 422

Increasing the Brain's Blood Supply 423

ANNOTATIONS

The Surgeon and the Patient 424

Contraction of Muscles 425

Malaria in Borneo 426

Electrophrenic Respiration 426

REPORTS OF SOCIETIES

MANCHESTER AND LIVERPOOL PAEDIATRIC CLUBS: Prematurity 434

OBITUARY

W. S. Edmond, F.R.C.S. 442

W. D. Arnison, M.D. 442

P. G. Horsburgh, G.M., M.R.C.S., D.P.H. 442

Epidemiology Section 443

SUPPLEMENT

Health Service.—CIVIL SERVICE MEDICAL OFFICERS—HEALTH SERVICE TRIBUNAL—WHITLEY COUNCIL—REGISTRARS GROUP—FRIENDLY SOCIETY CERTIFICATES—HOSPITAL STAFF MILEAGE PAYMENTS ..57

HEARD AT HEADQUARTERS 58

CORRESPONDENCE 59

COLONIAL MEDICAL SERVICE 62

ASSOCIATION NOTICES 62

CORRESPONDENCE

Fifty Years of Medicine. SIR WILLIAM FLETCHER SHAW, F.R.C.O.G.; R. G. HOGARTH, F.R.C.S.; H. S. LE MARQUAND, M.D.; Z. P. FERNANDEZ, M.D. 433

Anticoagulant Therapy. H. W. FULLERTON, M.D. 435

Analgesia in Childbirth. SHILA G. RANSOM, M.R.C.S. 435

Anaesthesia for Fenestration Operation. BRENDA G. HUTCHINSON, F.R.C.S.Ed. ..436

Maclean's Powder. EILEEN M. HICKEY, M.D. 436

Asthma and the Sympathico-adrenal System. D. O'DONOVAN, M.R.C.S. 436

Radiological Diagnosis of Pneumoconiosis. A. T. DOIG, M.D. 437

The Synovial Membrane. D. ENGEL, M.D. 437

Perforation of Carcinoma of Stomach. SEAN O'BRIEN, F.R.C.S.I. 437

Perforated Peptic Ulcer. JOHN A. SHEPHERD, M.D. 438

Erysipeloid. E. G. DOLTON, F.R.C.S. ..438

Anaphylactoid Purpura in Pulmonary Tuberculosis. J. W. FLETCHER, M.B. ..439

Idiosyncrasy to Aspirin. HENRY A. N. RICHMOND, M.B. 439

Fate of the Foreskin. DOUGLAS GAIRDNER, D.M. 439

British Institute of Radiology. J. A. C. FLEMING, M.B. 440

Development of Psychological Medicine. A. C. DOUGLAS, M.B.; W. A. O'CONNOR, L.M.S.S.A. 440

Students' Literary Style. RAINER M. WHELAN 441

Points from Letters 441

BRITISH MEDICAL ASSOCIATION, TAVISTOCK SQUARE, LONDON, W.C.1

No. 4650, WEEKLY, PRICE 2/-

Copyright

REGISTERED AS A NEWSPAPER

VALUABLE BOOK FREE!

Are you preparing for any Medical or Surgical Examination?

Do you wish to specialise in any Branch of Medicine or Surgery?

"Guide to Medical Examinations"
"The M.R.C.P. and How to Obtain It"
"The F.R.C.S.(Eng.) and Other Higher Surgical Examinations"
"How to Write a Thesis for the M.D. Degree"
"Guide to the London University Examinations"
"Guide to the D.P.M. Examinations"
"Guide to Dental Examinations"
"Guide to Higher Examinations for Nurses"

Any of the above will be sent post free on application

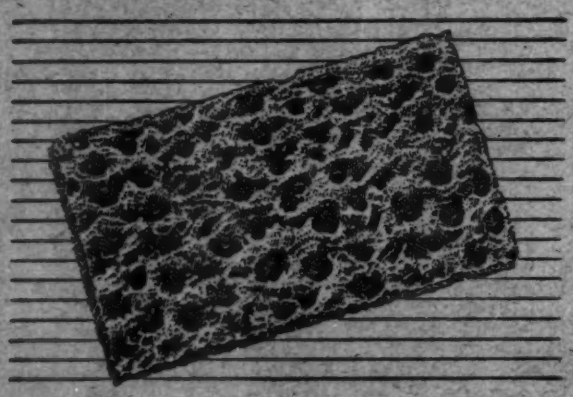
Leaflets dealing with the following examinations have also been prepared and will be sent post free on application.

"Diploma in Child Health"
"Diploma in Anaesthetics"
"Diploma in Radiology"
"Diploma in Laryngology"
"Diploma in Ophthalmology"
"Diploma in Physical Medicine"
"Diploma in Industrial Health"

We specialise in COACHING FOR ALL MEDICAL EXAMINATIONS

For all information relating to your examination write to

The Secretary,
MEDICAL CORRESPONDENCE COLLEGE,
19 Welbeck Street, London, W.1.



A palatable whole grain rye bread prepared in a form virtually free from moisture, so that complete mastication is assured. Ryvita can be eaten as an alternative to other breads. Many find that its characteristic flavour stimulates appetite.

RYVITA

ZŌPLA

STRAPPING

Zōpla Strapping is a first class product for surgical use. Very strong cloths, the mass is powerfully adhesive. White and Flesh Cloths, also on Elastic Cloth.

WHITE FELT

Zōpla on White Felt is very popular for padding and protective purposes. Does not harden in use.

ZŌPLA-BAND

Zōpla-Band, Elastic Adhesive Bandage, ideal where elasticity is essential.

MANUFACTURED BY
LESLIES LTD
EST. 1823
HIGHAM HILL RD
WALTHAMSTOW
LONDON, E.17

THE "SALTAIR" ARTIFICIAL BREAST

—the obvious solution of the psychological problem which frequently follows breast amputation. It restores the normal figure line, banishes self-consciousness, encourages resumption of normal activities. Can be worn while bathing, as it retains its shape when wet and can be easily dried. Available in the "Saltair" Brassiere or separately for sewing into patient's own foundation garment. Details to doctors on request.

Appointments at London address: 1, STANLEY HOUSE, 103, Marylebone High Street, London, W.1. Tel.: Welbeck 3034.

SALT & SON LTD BIRMINGHAM 2

BRITISH MEDICAL JOURNAL

LONDON SATURDAY FEBRUARY 18 1950

RECENT DEVELOPMENTS IN THE FIELD OF HEALTH IN INDIA*

BY

K. C. K. E. RAJA, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., D.P.H.

Director-General of Health Services, Government of India

The Health Survey and Development Committee, under the chairmanship of Sir Joseph Bhore, after a painstaking survey of health conditions in India, submitted towards the end of 1945 detailed proposals for a planned programme of development designed to provide the country with modern health services on a comprehensive scale. At that time the war had ended and high hopes were entertained that, as soon as India could settle her political problems and secure an adequate measure of independence to shape her own destiny, the national effort would be concentrated on programmes of development in health, education, and other fields. India had practically escaped the horrors of the war on her own soil, and while the repercussions of a conflict between nations on a global scale could not but affect her to some extent, she had emerged from the war with her financial status greatly enhanced and with the possibility of utilizing the assets she had built up for the improvement of the health and welfare of her people.

The settlement of political problems, which ended with the division of the country into two Dominions, India and Pakistan, occupied a period of two years after the cessation of hostilities, and during this time the attention of the leaders of the nation was so concentrated on the transfer of power that social reconstruction did not receive adequate attention. The birth of the two Dominions again marked a stage of high hopes of a determined drive by the Governments and the people to promote health and educational developments, to raise the economic status of the people, and to make life fuller and richer for all. But independence brought in its train an unprecedented catastrophe—namely, a large-scale exchange of population between India and Pakistan as well as widespread outbreaks of communal clash between Muslims and non-Muslims, resulting in bloodshed and suffering over large parts of the country.

The refugee problem and the communal trouble naturally took precedence over other matters, and all the available resources of the central Government and of those provincial Governments which were concerned had to be mobilized to meet the difficult situation. The exchange of population involved the movement of several millions of men, women, and children under extremely trying conditions of hardship, many having to travel some hundreds of miles on foot. There followed the establishment and maintenance of camps for these displaced persons with provision for their housing, feeding, clothing, and medical care. The largest of these camps was at Kurukshetra, and at one time it housed about 300,000 refugees. Other camps of varying but smaller size were distributed all over North-Western India, including the Provinces of the East Punjab, Delhi, the United Provinces, and many Indian States. Communal clashes brought into being emergencies which necessitated the mobilization of medical and surgical aid without notice and in different areas at almost the same time. All these put the heaviest possible strain on the country's health services.

The fact that major epidemics of a devastating nature did not take place is a matter of great satisfaction and gives some indication of the stupendous efforts made to prevent such disasters. Nor has the problem of displaced persons reached anywhere near its solution. The task of rehabilitation is only beginning, and with the hundreds of thousands of families uprooted from their homes and distributed widely over the length and breadth of India the winning back of these people to normal social life and their absorption into the communities among whom they have settled will take many years and will tax the resources of the country to the utmost.

I have briefly referred to these matters because it is against a background of such conditions that the country's efforts in the field of health within the past few years have to be viewed if a proper assessment of them is to be made. With the best intentions to press forward with the execution of plans for improving the health and welfare of the people the central and provincial Governments found it impossible to concentrate effort on such matters in the face of the overwhelming demands that the refugee problem made.

Present State of Public Health

Before reviewing the recent developments in health administration in India I shall briefly describe the existing conditions. The vital statistics that I quote relate to what was known as British India—that is, the territory which used to comprise India and Pakistan without the 600-odd States under the administrative control of Indian princes. The reason for doing this is that mortality rates for British India will probably be safer to use than those based on estimates of population for India alone. Our last census was in 1941, and, following the territorial changes and exchange of population on the partition of the country in 1947, any estimates may accordingly be subject to considerable error. The exclusion of the States is inevitable, because most of their vital statistics have not even that degree of accuracy which the figures for British

*Address delivered at a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine, London, on July 6, 1949.

India possess, while in the case of some of them no statistics are available. Even so, the exclusion of the States need not be considered to detract unduly from the value of the picture presented, because they lie interspersed with Indian territory in such a manner that their health conditions and those of the rest of the country are continually acting and reacting on one another.

The death rates for the inhabitants as a whole and for infants in British India and in certain other countries are shown in Table I. India will have to travel a long way

TABLE I

Country	General Death Rate per 1,000 of Population	Infantile Death Rate per 1,000 Live Births
British India	24·1 (1944)	169 (1944)
England and Wales	11·9 (1944)	46 (1944)
Australia	11·2 (1943)	36 (1943)
United States of America ..	10·6 (1944)	40 (1944)
New Zealand	9·9 (1944)	30 (1944)

on the road to health before she reaches the milestones already passed by Australia and New Zealand. The progress achieved in those two countries in the reduction of infant mortality is remarkable. In India neonatal mortality claims nearly half the total number of infantile deaths, and as death in the first month of the child's life is largely influenced by prenatal causes and by adverse factors associated with the confinement of the mother it becomes clear that the country's efforts to reduce infant mortality should concentrate on antenatal care and on adequate measures to provide skilled attention during confinement. Nearly half the deaths at all ages in India take place among children under 10 years, and about one-half of these deaths occur within the first year of life. In England the corresponding percentages are about one-fifth of those of India. A conservative estimate of the maternal mortality rate places it in the neighbourhood of 20 per 1,000 confinements. It is not possible to estimate the number of women who suffer from varying degrees of discomfort and disability resulting from child-bearing. A rough calculation based on the experience of other countries with better-developed health services shows that there must be four to five millions of such women in India.

The high rates of mortality in the different sections of the community are, as may be expected, accompanied by a wide prevalence of disease. For instance, it is estimated that at least one hundred million individuals suffer from malaria every year. The number of tuberculosis patients who are definitely ill and can transmit the infection to those who come in contact with them is said to be in the neighbourhood of 2.5 millions, while the annual mortality from this disease is estimated at half a million. There are about a million cases of leprosy, of which about one-quarter are infectious and probably help in propagating the disease.

The extent of prevalence of venereal diseases cannot be stated. An estimate made by a former Director-General of the Indian Medical Service (Sir John Megaw) about 17 years ago places the combined rate of incidence of gonorrhoea and syphilis at about 37 per 1,000 of the population. It seems almost certain that conditions arising out of the war must have contributed towards an enhancement of the rate. Both these diseases are responsible for much blindness, while syphilis accounts for a large amount of mental deficiency as well as for a considerable proportion of the abortions and premature births. Gonorrhoea produces a number of conditions affecting the genito-urinary organs in men and women as well as joint trouble, and in women it may cause sterility. The importance of these two diseases from the point of view of the public health is therefore evident.

India is regarded by other countries as an endemic centre for cholera, smallpox, and plague, and various quarantine measures are in operation against the movement of goods and passengers from India in order to prevent the entry of such infections into those countries. These diseases do not, however, make an impressive contribution to India's mortality, as they are collectively responsible for perhaps less than 5% of the total number of annual deaths. Nevertheless, the spectacular manner in which epidemics of these diseases rise and spread through wide tracts of territory invests them with considerable importance, and a large part of the effort put forth by provincial public health staffs is directed towards their control.

Nutrition.—This is an important contributory factor in the prevailing state of subnormal health in the community. In India the diet of many millions is insufficient and ill-balanced. In order to indicate how far existing levels of production of essential articles of food fall short of the requirements of the country the words of the Bhore Committee may be quoted. "In India about 80 to 90% of the food consumed by the people consists of cereals. Such figures as are available suggest that the average annual production of cereals in the country in 1939–43 fell short of the necessary requirements of the population by about 22%. In regard to other articles of diet, such as vegetables, fruits, milk, meat, fish, and eggs, the quantities now produced will have to be increased several times before adequate amounts become available for the proper nutrition of the people."

Health Services

The existing provision for medical relief for the people is definitely low in comparison with the more progressive countries of the West, as may be seen from the numbers of doctors and of hospital beds in relation to the population of the United States of America, England and Wales, and British India. The death rate in each country during 1944 is shown in Table II.

TABLE II

Country	No. of Doctors per 10,000 of Population	No. of Beds per 1,000 of Population	Death Rate per 1,000 of Population
U.S.A.	13·0	10·48	10·6
England and Wales ..	10·0	7·14	11·9
British India	1·6	0·24	24·1

About 70–75% of the doctors available in India are practising in urban areas, yet the rural population is about eight or nine times larger than that of the urban. Some idea of the inadequacy of medical institutions in the rural areas may be gained from the fact that in 1942 the average population served by a medical institution in the United Provinces was about 105,600, while the average number of villages for a rural population of this size is 224. The extent to which the personnel employed on preventive health duties are inadequate has been clearly stated by the Bhore Committee: "The total number of sanitary or health inspectors employed in British India is about 3,000, while it has been estimated that the number required will be in the neighbourhood of 12,000. The existing number of midwives is probably 5,000, while, for adequate service to the people, 100,000 are considered necessary. The total number of health visitors in the country is about 700 or 750, while, for the supervision of the work of 100,000 midwives, about 20,000 health visitors will be required.

The number of women doctors with special training in maternity and child welfare work is about 70 or 80, and of these only a dozen are women graduates in medicine with adequate special training in maternity and child welfare work."

Bhore Committee's Plan for a National Health Service

The foregoing brief discussion on existing health conditions indicates that in the development of a national health programme certain matters require special consideration. These include, among others: (1) an expansion of health services thoughout the country, particularly in the rural areas; (2) special provision for the health and welfare of children and mothers; (3) an all-round improvement of environmental hygiene so as to produce healthy living conditions for the community; and (4) a substantial rise in the standard of nutrition of the people. The plans put forward by the Bhore Committee give adequate recognition to all these matters.

The committee has taken the administrative district as the basis for the development of health services and has described the district health organization as follows:

"The district health organization will have as its smallest unit of administration the primary unit, which will normally serve an area with a population of about 10,000 to 20,000. A number of such primary units (about 15 to 25) will together constitute a secondary unit, and a varying number of the latter (about 3 to 5) will form the district health unit, the designation by which the district health organization will be known. At each of the headquarters of the district, secondary, and primary units will be established a health centre as a focal point from which the different types of health activity will radiate into the territory covered by each type of unit. The district health centre will possess general and special hospitals with a total bed strength of about 2,500, and all consultant and laboratory services required for the diagnosis and treatment of disease on up-to-date lines. The administrative staff of the district health organization will be located here and will exercise supervision over the district as a whole. Similarly, the secondary health centre will be provided with hospital accommodation of about 650 beds and with equipment and other facilities on a generous scale, although not up to the standard of the district health centre. The administrative staff of the secondary unit will be attached to the secondary health centre and will exercise supervision and control over the primary units included in it. The primary health centre will have a 75-bed hospital, and health administration over the area included in the primary unit will radiate from this centre."

This represents the ultimate stage of the district health organization when the committee's long-term programme, probably requiring 30 to 40 years, is completed. At the start inadequacy of trained staff and of funds will necessitate the development of the plan on more modest lines, and the committee has put forward a short-term programme which has been worked out in some detail for two successive stages of five years. A primary unit under the short-term programme will serve a population of 40,000 as against 10,000 to 20,000 when the long-term scheme is completed. The staff, equipment, and number and variety of medical institutions will all be on a limited scale during the early years, but the health plan has an organic unity which ensures continuity of development, its successive stages of expansion helping to promote the range and effectiveness of the services made available. In addition to general health services, detailed suggestions have been put forward for organizing adequate measures for the protection of special groups, such as mothers and children, the school-going population, and industrial workers, as well as for controlling the incidence and spread of certain widely prevalent diseases—e.g., malaria, tuberculosis, leprosy, venereal diseases, smallpox, cholera, and plague.

Recent Developments

In the light of this survey of the state of the public health in India and of the comprehensive proposals of the Bhore Committee I shall review briefly such developments as have occurred during the past few years. At a conference of the central and provincial health ministers, which was held in October, 1946, the proposals of the Bhore Committee were accepted in principle by all the Governments, although it was recognized that, owing to the many difficulties due to post-war conditions, the rate of progress in implementing the proposals might be slower than suggested by the committee. The events that followed the partition of the country in 1947 made the position even more difficult. Nevertheless, provincial Governments have made some attempts to expand their health services on modern lines and particularly to provide rural medical relief by opening more dispensaries and appointing trained doctors to man them. All provincial Governments have given priority to an increase in the existing facilities for the training of both medical and ancillary personnel.

The central Government, in spite of its preoccupation with refugee medical relief during the past two years, has not been slow in making its contribution to the health programme. Grants from the central Exchequer have been available, from 1946 onwards, to provincial Governments for approved schemes of development. Further, during the last two years the central legislature has enacted important legislation pertaining to health. The chief among them are: the Employees' State Insurance Act, amendment of the Factories Act, the Dental Act, the Indian Nursing Council Act, and the Indian Pharmacy Act.

The Employees' State Insurance Act is intended to confer on industrial workers some measure of social security through the provision of cash and medical benefits in respect of sickness, injury, and disability, and, in the case of women workers, maternity benefit. In due course the provisions of this Act can be extended to all classes of workers, including agricultural workers, and the medical services under the scheme to their families also. Thus in course of time the medical provision made available under this Act will probably cover about 80–85% of the population. The scheme will be worked by a quasi-governmental organization, the Employees' State Insurance Corporation. The expenditure in connexion with the scheme will be met from the Employees' State Insurance Fund, towards which employees and employers will contribute.

Side by side with these developments the newly amended Factories Act has made comprehensive legal provision for promoting the health, safety, and welfare of workers in factories. The definition of the term "factory" has been extended in order to bring in a much larger number of workers, and provision has been made for preventive measures inside the factory, for adequate medical attention following accidents, and for the medical examination of workers before employment. The age for the employment of children has been raised from 12 to 13½ years, and adolescents are to be protected adequately against employment in hazardous occupations.

The three Acts relating to the professions of dentistry, nursing, and pharmacy are intended to promote uniform and satisfactory standards of training in these subjects and to regulate the practice of these professions on proper lines.

Mention may also be made of the Drugs Act, which was passed in 1940 and was brought into operation in April,

1947. It is an important legislative measure, particularly in view of the fact that during recent years the Indian market has been flooded with all kinds of spurious medicines. The central and provincial Governments are co-operating in the development of the necessary control measures.

In view of the growing menace of tuberculosis the Government of India has, among other measures, embarked on a B.C.G. vaccination programme with the help of the World Health Organization and of the International Children's Emergency Fund. A laboratory for the manufacture of B.C.G. vaccine has been established by the central Government at the King Institute, Guindy; and vaccination, which was started in August, 1948, in a rural centre in South India, has now been extended to a number of large cities such as Calcutta, Bombay, Madras, Delhi, Baroda, and Amritsar, where the incidence of tuberculosis is high. Six teams of foreign experts are working in India, and a number of local teams are being trained in each place under their care. Thus it is expected that the vaccination campaign will make progress. It may also be mentioned that Dr. Holm, who is the adviser on tuberculosis to the United Nations Children's Emergency Fund, visited India recently, and, on his suggestion, the idea of starting one rural and four urban centres for antituberculosis work, with special emphasis on the preventive aspects of the problem, is being seriously considered. It is expected that the Fund will give substantial help towards this scheme.

These developments are, it is true, likely to touch only the fringe of the problem; even so, it is felt that a start on sound lines is being made, and the intention is that in each of these centres there should eventually be developed a complete antituberculosis scheme in which preventive work and treatment in the homes of the people, controlled by a dispensary with adequate diagnostic facilities, hospital isolation, and aftercare, would all be provided. Apart from the benefit that these centres will confer on the local people, they are intended to play an important part as training organizations for the various types of tuberculosis workers that are required.

Other Committees

In addition to the activities just described I may refer to the work of a number of committees which the Government of India appointed. They are:

1. An Upgrading Committee for the purpose of reporting on the steps to be taken for increasing the facilities for postgraduate medical education and research in the country by improving particular departments in existing medical colleges and research institutes in order to make them centres of training on an All-India basis.

2. A Vital Statistics Committee for reporting on the steps that are to be taken by Governments for improving the collection, tabulation, and study of vital statistics and for the continuous investigation of population problems.

3. A Leprosy Committee, which has been entrusted with the task of putting up proposals for the establishment of an All-India Teaching and Research Leprosy Centre.

4. An Environmental Hygiene Committee to advise the central and provincial Governments on problems relating to environmental hygiene in rural and urban areas.

5. A Rural Health Committee for putting forward proposals for modifying and simplifying the district health organization suggested by the Bhore Committee for providing an integrated curative and preventive service to the people, with special reference to the rural areas.

The Upgrading Committee's proposals were received by the Government of India recently, and steps are being taken to carry out its recommendations. The Bhore Committee suggested a threefold programme to make India largely self-sufficient in postgraduate medical training. The first is the establishment of an All-India Medical Institute designed to provide teaching and research facilities of a high order in all the major branches of medicine and of certain allied professions. The second is the improvement of selected departments in existing medical colleges and research institutes in the Provinces so as to enable them to serve as teaching centres on an All-India basis. The third is the establishment of special teaching and research centres for some of the diseases which constitute major health problems in the country, the location of these institutes being determined by the availability of adequate clinical material and of facilities for research.

The creation of the All-India Medical Institute has been accepted in principle by the Government of India, and a special committee appointed for the purpose has described in detail the plan of its development. There may be some delay in its establishment because of the large expenditure that is involved, the difficulty of construction owing to the shortage of building material, and the large demand that the institute will make for teaching staff of the requisite quality. The Upgrading Committee's programme deals with the second recommendation of the Bhore Committee, and the improvement of existing institutions in different parts of the country will help to distribute postgraduate training facilities and will also promote the production of teachers and of research workers who will later become available for the All-India Medical Institute.

The third recommendation asks for the establishment of special institutes for some of the major diseases. The Malaria Institute of India is one such institution, and the contribution it has made to research in that subject and to the training of malaria workers has been considerable and has received recognition in India and abroad. The Leprosy Committee, to which reference has already been made, has put forward suggestions for the creation of a leprosy teaching and research centre, and it is expected that these recommendations will receive early consideration by the Government of India. The establishment of a Tuberculosis Institute has also been accepted. Thus the threefold programme of development envisaged by the Bhore Committee will, it is anticipated, be fulfilled without delay.

It may also be mentioned that the question of adequate control over postgraduate medical education has received consideration. At a recent conference of the vice-chancellors of all the universities in India as well as of representatives from the medical faculties of these universities it was decided that the Inter-University Board of Vice-Chancellors should nominate an All-India Council of Postgraduate Medical Education, which would perform the function of co-ordinating and regulating postgraduate medical training in the country in the same manner that the Medical Council of India performs a similar function in the field of undergraduate training. It has also been proposed that the central Government should help postgraduate medical education through grants to the institutions concerned, the wise distribution of these grants being another method of promoting the development and maintenance of adequate standards of instruction. This Council is being established, and is expected to start functioning at an early date.

Proposals of the Committees

I shall now say a few words about each of the five committees mentioned above.

Upgrading Committee.—After visiting a number of medical colleges, research institutes, and special hospitals such as those

for cancer and mental diseases, this committee put forward proposals for raising the standard of existing departments in a number of these institutions. The subjects include anatomy, physiology, pathology, paediatrics, mental diseases, industrial health, tuberculosis, thoracic surgery, venereal diseases, microbiology, social medicine, and cancer research. The places where these institutions are located are Calcutta, Madras, Vellore, Bangalore, Bombay, Delhi, and Ranchi. It will be seen that, as the result of the proposed developments, there will be a wide distribution of postgraduate training facilities. The committee has recommended that the professorial staff employed in the departments of non-clinical subjects such as anatomy, physiology, and pathology should be whole-time and that they should be debarred from private practice. As regards clinical subjects two suggestions have been put forward. The staff can either be whole-time and without private practice or they can be employed on the basis of a lower salary with private practice restricted to the institution at certain fixed hours in the week and with rates of fees prescribed by the authority concerned in each case. The whole cost of the scheme is to be shared by the central and provincial Governments. The implementation of the scheme will, it is expected, be started shortly. The necessary funds have been provided in this year's budget.

Vital Statistics Committee.—The second conference of the central and provincial health ministers, held in August, 1948, thought it essential that immediate steps should be taken to improve vital statistics, and the committee appointed by the conference for this purpose has submitted a plan which modifies, from the point of view of cost and personnel, the comprehensive proposals put forward by the Bhore Committee for establishing the registration and study of vital statistics on a sound basis as well as for the continuous study of demographic problems. Both these committees stressed the importance of appointing a registrar-general at the centre and registrars in the provinces in order to combine the functions of vital statistics, the census, and population studies under the same organization. A registrar-general was appointed a few weeks ago by the central Government, and it is intended that the provinces should be asked to appoint corresponding officers for their own territories. Various other recommendations have also been put forward by the Vital Statistics Committee, and these are receiving consideration. It is hoped that the carrying out of these proposals will help to improve vital statistics and to promote the study of population problems in India on sound lines.

Leprosy Committee.—The report of this committee was submitted to the Government of India a few weeks ago and is receiving its serious consideration. The committee has proposed: (1) the establishment of an All-India research and teaching centre at Madras; (2) the training of selected workers from the different Provinces so as to enable them to start leprosy research centres in their own areas; and (3) the organization of epidemiological, pathological, biochemical, and other studies in leprosy on a comprehensive scale. It is anticipated that the establishment of the institute will be started during the present year.

Environmental Hygiene Committee.—This committee is faced with the difficult task of putting forward practical proposals for a graded programme of action for the improvement of living conditions, taking into account the difficulties regarding finance and building material that the country has been facing during the post-war period. The committee is expected to submit its report at an early date.

Rural Health Committee.—This committee is called upon to suggest to the Governments a modification of the scheme of health services which the Bhore Committee put forward three years ago, in view of the fact that inadequacy of trained personnel and insufficiency of funds have made it difficult for the health authorities to execute that committee's scheme in full.

Rural Health

Without anticipating the findings of the Rural Health Committee I may put forward certain suggestions in regard to the development of a modified rural health programme.

While it is recognized that the establishment of the health services outlined by the Bhore Committee even in its short-term programme may present difficulties in the next few years, it is considered that, with necessary changes in regard to details, it should not be difficult, at least in certain parts of the country, to mobilize existing resources in institutions and personnel and to organize a health service which will preserve the main outlines of the Bhore Committee's plan. For instance, existing district headquarters hospitals may, wherever necessary, be enlarged into institutions of at least 200 beds, while at the headquarters of the subdivisions and of taluks smaller hospitals may be organized out of existing ones without undue expense. The most important part of the programme is to provide primary units which will give the rural areas reasonably sound health protection, particularly on the preventive side.

In certain Provinces there already are a large number of rural dispensaries, and these can form the centres round which the primary health units are built. There also exist rural health organizations for preventive work, consisting of health officers, sanitary inspectors, health visitors, midwives, vaccinators, and special staff for the control of epidemics. The present numbers of such personnel will no doubt be too small for any attempt at the organization of a Province-wide scheme. In selected areas, however, the existing staff, supplemented by a few additions, can be utilized for creating primary units, even though these units may be in a less complete form than that recommended by the Bhore Committee. Such primary units should make it possible to carry out control measures against preventable diseases in a manner designed to demonstrate adequate results within a reasonable period of time. The enforcement of such measures should help to reduce the existing morbidity in the country by 50 to 60%.

It is interesting to note in this connexion that the results of an intensive antimalarial campaign in Ceylon have gone far beyond the control of that disease and that a general rise in the standard of health of the people has become evident, presumably because the devitalizing effect of malaria and the consequent tendency to contract other forms of sickness have been materially reduced. A similar encouraging report has been received from Kanara district of the Province of Bombay, where intensive antimalarial measures have been in progress for the past few years.

Indigenous Systems of Medicine

All these developments are in the field of modern medicine. It should be mentioned that there is a demand from certain sections of the people for the resuscitation of the indigenous systems of medicine—the Ayurvedic and the Unani—as well as of homoeopathy. In deference to their wishes the Government of India appointed two committees, one for indigenous medicine and the other for homoeopathy. The report of the former was published a few months ago and that of the latter will be available soon. It is expected that the Government of India will then declare its policy towards these systems.

While I have no right to anticipate and define what this policy will be, my impression is that the Government of India will fully recognize that, both from the standpoint of its international health obligations and from that of providing adequate health services to the people, modern medicine has inestimable advantages in that its interpretation of health and disease and its elaboration of measures for the diagnosis and treatment of ill-health and its prevention are based, to a progressive degree, on the utilization

of the resources that physical and natural sciences make available to us. At the same time there is no reason why research in indigenous medicine should not be stimulated so as to secure from those systems all that is scientifically proved to be valuable to mankind, whether it be in the realm of drugs, principles, or special practices. Thus it may well be that modern medicine will in due course emerge enriched by all that is demonstrably good in our ancient systems.

I would also add that India's active participation in the work of the World Health Organization is further evidence of her interest in modern medicine and of her desire to utilize it fully for the good of the people. If she was really opposed to the practice of modern medicine she would not have pressed for the location of the headquarters of one of the Regional Bureaux of WHO in India. Indian medical scientists are serving on the expert committees of that organization dealing with cholera, plague, trachoma, venereal diseases, malaria, tuberculosis, and maternal and child health. India has undertaken to carry out extensive investigations into various problems relating to cholera at the request of the Expert Committee on Cholera, and that committee is being invited to hold its next meeting in India towards the end of the year.

As has already been pointed out, a large-scale programme of B.C.G. vaccination is in progress with the assistance of the World Health Organization and the United Nations Children's Emergency Fund, and these two organizations as well as the Food and Agriculture Organization are helping India with teams of experts and equipment for starting centres of active work on modern lines in respect of malaria, tuberculosis, venereal diseases, and maternal and child health. Lastly, I may mention that during the past three years a scholarship scheme sponsored by the Government of India has sent abroad to the United Kingdom and the United States a few hundred medical men and women for postgraduate training in various subjects.

It is pertinent to quote here the remarks on indigenous systems of medicine which the Hon. Rajkumari Amrit Kaur, Health Minister with the Government of India, made in the Dominion Parliament in 1948 during the debate on the health budget:

"I do want members to realize that there can be no question of the indigenous systems supplanting the modern scientific system. Science, as I have said once before, knows no barriers of race or clime. Knowledge gained through research and practical application may not be ignored. It would be folly for us to dwell on or rest content with our achievements in the past and shut the windows of our understanding, as it were, to the light of modern scientific achievements in the vast field of medicine and surgery. I am sure it would be wrong on the part of any State not to try to afford the best and most scientific medical relief to the sick and suffering committed to its charge. It does not follow that the cheapest is the best. If we have not been able to afford adequate medical attention and relief so far, that is surely both our fault and our misfortune. It is not the fault of any system. Scientific knowledge of chemistry, of physics and biology, of the structure and functions of the various tissues and organs of the body, sufficient knowledge of surgery, of sepsis and asepsis, of bacteriology, *x* rays, electrotherapy, dentistry, and modern public health—these are the minimum essentials for anyone who can claim to attend to sick and suffering humanity. The important thing for us to consider is in what condition the indigenous systems of medicine to-day are and what is necessary to make them a progressive scientific art. We may not, we dare not, be content with less. There is ample room for research. Whatever in either the Ayurvedic or Unani systems of medicine or in homoeopathy stands the test of scientific scrutiny must and will be translated and synthesized in modern scientific medicine and added to the fund of world knowledge, and I would beg of the House to agree with me that it is in the spirit of the quest for truth—and what is science but a quest for truth?—that we must go forward and see to what extent indigenous systems can be developed and regulated for medical relief in the country, and not in any spirit of rivalry with allopathy."

The Prime Minister of India holds equally strong views regarding promotion of the scientific approach towards the study of health problems and their solution. In the circumstances it seems to me quite unlikely that India will turn her back on scientific medicine and follow for sentimental or even mystical reasons any other form of medical practice.

MATERNITY AND THE NATIONAL HEALTH SERVICE*

BY

JAMES YOUNG, D.S.O., M.D., F.R.C.S., F.R.C.O.G.

Professor of Obstetrics and Gynaecology, University of London

The maternity service, unlike all the other medical services save only those dealing with child welfare, is in a very special sense concerned with health. In any area its function is the promotion and the maintenance of the health of a group of individuals for the most part in the prime of life and whose numbers, and therefore whose needs, can be estimated with considerable accuracy. A maternity service succeeds in the measure in which it exercises a continuing and enlightened care of the woman and child throughout pregnancy, labour, and the lying-in period. It is bound to fail in proportion as it permits this care to be broken at any stage or when it allows it to pass into the wrong hands.

At a time when we were on the average losing between four and five out of every 1,000 pregnant or parturient women there were throughout the country many examples of large maternity practices which showed year after year a death rate of 1 per 1,000 or less. It is well known that such practices were always those in which the administration was based upon a unity of control and direction of the various component elements of the service—midwife, clinic, health visitor, doctor, consultant, and hospital. It was apparent to all who gave thought to the matter that the high national mortality rates persisted, despite the experience of these scattered areas in which local enterprise was saving mothers and babies, because of the low standards which continued to prevail throughout the country generally. It is important to note that the low mortality and morbidity rates of mother and child characterizing these efficient practices were being obtained before the advent of sulphonamides brought down in a remarkable way the loss of life from puerperal sepsis and from 1936 onwards led to the first real downward trend in the total maternal death rate. This saving of life was in no sense due to an improvement in the standards of midwifery. There was as much puerperal infection due to the same cause as before, but this infection and these causes were concealed by the life-saving properties of the new drugs.

It was also notorious that these high annual death rates persisted despite the great improvements which occurred in the training of midwives and doctors, the increasing attendance of women at the antenatal clinics, and the rapid

*Inaugural Lecture delivered at the Royal College of Midwives on October 10, 1949.

increase in the number of hospital beds. The State, local authorities, and the schools were at high cost improving and increasing the facilities available for maternity, but they were failing to make any impression on the national mortality figures.

Unity of Control

The successful and pioneer services which, as we have seen, were springing up throughout the country achieved their success by placing midwife, doctor, specialist, and hospital under one control. In some cases, as in Croydon, this control was centred in the local health authority and the medical officer of health. In other cases, as in some hospitals attached to teaching schools—e.g., Guy's Hospital—the control was vested in the teaching hospital. The main thing that mattered was not so much the source of the control as the fact that it existed as an intimate, living, and actively vigilant entity. The main characters of all such ideal services were easy to recognize. One of the dominating features was the corps spirit which pervaded the team. With the unity of control there was associated a unity of purpose. Midwives, doctors, and consultants had each a sound knowledge of the part they had to play in the team, and they were secure in this knowledge.

The antenatal clinic, which in a sense formed the pivot of the service, was a common concern of all. Here the cases were studied with care, and in this function all members of the team shared. The normal healthy women—the great bulk of the total—fell naturally to the lot of the midwife for their delivery. The emphasis throughout was on health, and the dominant role of the midwife meant that labour was allowed to express itself as an entirely physiological act, and the disasters attendant on premature attempts at delivery and "failed forceps" were eliminated. At the same time at the clinic the small proportion of women whose pregnancies departed from the normal were immediately brought under expert care and in the vast majority were steered safely through to the end. For them, if necessary, the admission to hospital was an easy arrangement made immediately between two members of the one team. There were no administrative gaps often spelling an inevitable break in the continuity of the care and the tragic loss of valuable time and a rapid tilting of the scales against the patient. The preventable deaths that constitute the great bulk of the maternal death rate and that appear in the mortality statistics under such headings as sepsis, puerperal shock, haemorrhage, etc., were virtually expunged from such a service. Its success was signalized by the delivery of two, three, four, or even five thousand consecutive cases without a death.

An important advantage of such a unitary control is that it makes possible an efficient system for the recording of the clinical notes and the statistical results throughout the service. This is indeed an essential element in the continuity of supervision from the time the woman is enrolled until she and her infant are discharged, and it is equally essential for the accurate compiling of the statistical records, by means of which results are scrutinized and improvements devised. It is notorious that where records have to be passed backwards and forwards between different authorities not only is there delay that may be dangerous but there is apt to be a lack of uniformity in the standard of the recording.

A further advantage of the close co-ordination of the various aspects of the service—domiciliary midwifery, the clinic, and the hospital—is that it creates the only sound structure for the training of midwife and doctor in the fundamental principles that must inform all good maternity practice.

The various plans that from time to time have been put forward for a National Maternity Service have without exception been based on these principles. They formed the main recommendation in the Report on a National Maternity Service promulgated by the Royal College of Obstetricians and Gynaecologists in 1944. These plans have for their support evidence derived from well-attested experience throughout the country extending over several decades, and they are put forward with powerful backing.

Effect of the New Service

Instead of a system which makes for co-ordination of effort between the various agencies concerned with maternity the new Health Service dissipates the control of this supreme single process over three different authorities, all heavily burdened with multiple administrative problems and in all of whom claims of maternity must necessarily constitute merely one of many commitments. The midwife and clinic fall under the control of the local health authority (the county or county borough council); the general practitioner, who is invested with new statutory functions in relation to midwifery, is under the executive council; whilst the specialist and hospital are controlled by the regional hospital board, or the board of governors in the case of a teaching hospital.

Here we have, indeed, the very antithesis of that intimate and living collaboration which animates the ideal service for which so many of us have been working during long years. Instead we are face to face with a distribution of responsibility so grotesque that many women will necessarily during the nine months of their child-bearing come under three different agencies. If she has a general practitioner as well as a midwife, and if finally she is sent to hospital, she may find herself enrolled, it may be within a few days or even a few hours, on the records of three different administrative authorities.

Those of us who have experience of large administrative bodies which transact their business at monthly meetings and whose officers cannot be expected to make rapid decisions on questions affecting policy will realize the gravity of the situation with which the new national maternity service is faced. It is peculiarly unfortunate that unless some adjustments are accepted the new provisions will virtually block the free expansion or even the existence of those pioneer efforts which had so signally established the value of unitary control. To many it must seem as if a black cloud had descended upon a vista that seemed to be full of promise for the future of our science and art.

Doctor and Midwife

The new provisions have been criticized on other grounds. Among these is the risk that the terms under which the general practitioner is included in the service may seriously prejudice the status of the midwife. In this connexion it is important to note that with her improved training and status the midwife has with advantage to the service gradually assumed more and more the responsibility for the care of the normal case. In 1946, as was shown in *Maternity in Great Britain* (1948), the midwife was responsible for 72% of all deliveries, including domiciliary and hospital cases. The new provisions are associated with the risk that she may be displaced by the general practitioner from the position which she has rightly won for herself. This would seriously imperil the security of the whole service, for it has long been recognized that for normal delivery the general practitioner with his many other commitments is less suited. At the same time, to give him a statutory position which

leaves to him the decision whether he should or should not be present at the delivery may easily be transformed into a position in which the patient would expect or even demand his presence.

Even now, despite the strong claims which the midwife has established for herself, there are still many women who in a free service would choose a doctor because he can bring her relief for her pains, which many midwives are still unable to do, and because of a fancied greater security. If this attitude were to become general it would at once degrade the midwife to the status of the maternity nurse and rob her of the independence in her own sphere which she rightly cherishes.

Clinic Officer

It is known that this unfortunate trend has taken place in some areas, and the Ministry in a pamphlet, E.C.N. 27 (July, 1949), has voiced its concern. In this pamphlet it is stated that the reason for the inclusion of the general practitioner is because hitherto "the medical officer in charge of the clinic could accept no responsibility if an abnormality arose, and the midwife had therefore to call in a general practitioner who had not previously seen the patient." It is true that this was one of the serious defects in the former maternity services. It was a defect which arose out of a division of responsibility, and it is unfortunate that in an effort to solve it the Ministry has adopted a policy which still further complicates the allocation of responsibility. It would surely be a simpler and more effective arrangement to remove the embargo at present placed on the clinic officer. In the midwife's case he has already been concerned with the antenatal supervision of the patient and, apart from this embargo, for which there was formerly some sanction but which should no longer be operative, he should in accordance with the plea put forward in the Ministry's own circular be a more proper person to deal with the midwife's emergency than the general practitioner whom it is now proposed to bring on to the stage to enact a part for which he may or may not be fitted.

It is true that many clinic officers are no more expert in practical obstetrics than many general practitioners, but the new service recognizes this and is taking steps to rectify it. It is equally true that some time will be required for the evolution of the clinic services in this respect. But it may be argued that it would be in the better interests of the service to encourage such a development, with the knowledge that meanwhile the clinic officer in time of difficulty has access to the specialist and the hospital. We have already seen that in many well-organized services the specialist staff of the hospital officiate at the clinic, in this way forging the links between midwife, clinic, and hospital.

Place for the General Practitioner

That the general practitioner should be constrained to enter normal midwifery for the purpose of securing for the patient the benefits of analgesia and anaesthesia brings with it, as I elsewhere hinted, quite definite risks to mother and child. For the busy practitioner, if he pledges himself to be present at the labour, must often find that his conscience demands the breaking of this pledge if he is not to be compelled against his better judgment to interfere with the course of normal labour. In the one case he forfeits the confidence of his patient; in the other he embarks on a course that leads often to disaster. For these reasons it has rightly been argued that the best solution of an admittedly difficult problem is to train the midwife in the use of safe analgesics, such as gas and air, and by the prosecution of research to obtain better and more easily handled analgesic preparations.

In making these observations directed to the unification of the various branches of the service I do not wish to imply that there is no place for the general practitioner in obstetrics. Many practitioners are expert in this class of work, and in group practices these general-practitioner obstetricians can show good records. There would be a great advantage in encouraging such doctors to serve on the clinic and be available for emergency calls. In rural districts they give valuable service in the smaller maternity hospitals. Further, the family doctor by his special knowledge of the patient and the confidence which he inspires may be called upon to play an important part in the supervision of the general health of the mother and in the subsequent care of the child.

The risk that the provisions of the new service may lead to a competition between the doctor and the midwife for the care of normal midwifery is, as we have thus seen, a very real one. It is a risk that can be satisfactorily allayed only from the centre. It will gravely endanger the status of the midwife and the doctor alike, and it demands urgent readjustment to prevent grave dislocation of the peripheral services.

Reintegration of Purpose and Effort

It is a matter for serious thought how far we can devise, within a system that has succeeded in driving such deep wedges between the different agencies dealing with maternity, an adequate means of achieving a reintegration of purpose and effort. Already there have appeared various proposals to this end. Thus the Report of the Working Party on Midwives (1948) recommends that "in each hospital region a maternity services committee be set up to include obstetricians, general practitioners, and midwives" (para. 104). An informed article in the *Practitioner* (1949) suggests that each regional board "should be made responsible for co-ordinating the maternity service within its region." An objection which may justly be advanced against proposals based upon such regional action is that the regional board is neither by its representation nor by its function well equipped to initiate such a step. The concern of the board is the provision, maintenance, distribution, and integration of the hospitals over an area which is necessarily large and may indeed include several counties and many local health authorities. Thus in England, Wales, and Scotland there are well over 400 local authorities responsible for maternity and child welfare, whereas there are only 19 regional hospital boards. These boards, it is true, have under their jurisdiction the maternity hospitals in their areas, except those under the boards of governors of teaching hospitals. But their statutory concern with midwifery is solely in relation to the hospital and the specialist staff in their areas and to the provision for the local authority of beds and care for the large number of normal and the smaller number of abnormal cases that require admission to hospital.

It is primarily the extent of the local authority area and the needs of its obstetric community that must determine the size and distribution of the local maternity hospital or hospitals and the nature and extent of the services to be rendered by them. In regional board areas there will on the average be over twenty such local authorities requiring services varying from area to area in extent and in kind. It is, moreover, in a very special measure the local authority that, through the work of its midwives, its medical staff, its health visitors and clinics, sets the standards of service obtaining in the area not only for the domiciliary but also

for the hospital service. It is the local authority, moreover, that exerts a major influence in the disposal of the patients in relation both to home and to hospital delivery.

A further cogent argument against placing the onus of co-ordinating the maternity services on the regional board is that in each regional area the responsibility for the provision of the required facilities is shared to a considerable extent by the board of governors of the teaching hospitals. Furthermore, as we shall see, the functions of the two boards in the sphere of maternal (and child) health in a fully developed scheme are in some respects quite different.

For all these reasons it is difficult to envisage the regional hospital board as the agent which should appropriately be expected to assume the administration of the maternity in their area. At the same time it is obvious that, through their control of the hospital and the specialist staff, and such essential ancillary services as blood transfusion, the emergency "flying squad," etc., the regional boards must exercise an important influence on the structure and practice of midwifery within their territory.

How to Get Unification

I have previously indicated that the ministerial decision to disperse the administrative control over three separate agencies has resulted in a situation which is even more confusing than that existing before the Act. It has tended to consolidate by statute a system which, though unsatisfactory, yet had some fluidity and allowed of the creation by local enterprise of many efficient peripheral services. It must be our object to discover how far, in the absence of any central policy directed to the encouragement of collaboration between the disparate elements, we may yet be able to secure such a measure of unification as to prevent the major risks.

We have at the outset to emphasize that unification is meaningless except in so far as it achieves at the periphery a close and active collaboration between all the elements concerned. The building up of an effective national service means a system in which all of the multitude of separate services throughout the country are each capable of creating from their own resources, both human and material, a cohesive and self-sufficient unity. In this is to be found the sole guarantee of safe midwifery. Central direction and guidance could have made this end more easy of attainment, but even if this direction and guidance are denied us we dare not relinquish the effort.

The aim, then, must be to devise some method by which domiciliary midwifery (local authority), hospital (regional board or board of governors), and doctor (executive council) can combine in their areas to close the administrative gaps that threaten the safety of their mothers and babies. In a previous communication (Young, 1943) I have discussed this problem in relation to the organization of the maternity and child-welfare services for the efficient teaching of medical students, doctors, and midwives. Though on that occasion the problem was reviewed from an angle somewhat different from that with which we are now concerned, the argument then advanced applies with equal force to our present need. I then suggested that the linking of the department of obstetrics of the medical school and hospital with the local welfare authority would provide the intimate collaboration between the hospital and specialist on the one hand, and the various activities of domiciliary midwifery (midwife, clinic, health visitor) on the other hand, that is required both for the establishment of continuing clinical control and for effective teaching and research. Indeed, it is obvious that in a teaching centre the public health and the clinical and academic aspects cannot be separated without loss to all. In the previous communication containing these proposals I stated that this collaboration would "at once identify them [the teachers] with those wider social activities of the health authority that are related to mother and child, such as mothercraft, nutrition, health education, etc., and thus open out a new era in the history of the schools. It at once establishes the professor as a professor of health in the wider and creative sense."

The scheme I have just described gives expression to the principle frequently enunciated as one of the aims of the new Health Service—namely, the bringing of the influence of the university and teaching school to bear on the formulation and guidance of public health policy. There is no sphere in which it can operate with more profit both to State and to school than in that of maternity and child welfare. It may be justly described, moreover, as outlining the only manner in which in the process of natural evolution the boards of governors, the medical school, and the local authority must seek to achieve collaboration for their common ends.

Collaboration and Control

In the sense that the board of governors of a teaching hospital or hospitals has a jurisdiction that covers a restricted area the contracts to be entered into for these common purposes can be made with relative ease and with a minimum of readjustment on the administrative plane. In the case of the regional board, on the other hand, the large territory and the multiplicity of local authority, and thus of independent maternity areas with which they deal, necessarily imply a greater range of such administrative readjustment. But the problem remains essentially the same—namely, collaboration between the various local authorities and the hospitals and specialists serving their needs to procure continuity of supervision and control from the domiciliary service (including midwife, clinic, etc.) throughout and up to the hospital in each of the discrete maternity areas included within the region.

The detailed administrative arrangements might well vary in different areas, as was the case in the successful maternity services that existed before the Act. In the proposals which I have elsewhere put forward the control was, by mutual arrangement between local authority, school, and hospital, placed in the hands of the university professor. In a non-teaching centre the contract was made between hospital and local authority, the control being exercised by a senior member of the hospital staff. Under existing conditions similar results would be obtained by suitable mutual arrangements, financial and other, between regional board and local authority and, in a teaching area, between board of governors, school, and local authority.

Under the new provisions, although the antenatal care of normal cases is placed by statute in the hands of the local authority, it is well known that maternity hospitals reserve the right, which they cannot abrogate, to carry out the antenatal supervision of the normal cases which they admit for delivery. This anomaly would naturally largely disappear by the unification of the arrangements for the disposal and control of all women in the area.

The administrative arrangements necessary to regulate the general practitioner's part in the maternity service present considerable difficulty. At the outset it is clear that the stability of such a service as I have described would be gravely impaired unless all the members of the team were prepared to work smoothly with the higher interests of the service as their sole guide. I have already indicated how the general-practitioner obstetrician can in a well-organized

service perform important duties at the clinic, in the home, and sometimes in the hospital. It would be unfortunate if, in a matter which is confessedly difficult and even delicate, we should through lack of the spirit of conciliation and statesmanship fail in our effort to reach the aim accepted by us all as the ultimate desideratum—the unbroken continuity and singleness of control of the woman throughout the whole of her time of pregnancy, labour, and puerperium.

Conclusion

The scheme here put forward does not claim to present more than an outline of the administrative adjustments required to give it effect. It may be objected that by placing the immediate administrative responsibility for the maternity area on the hospital specialist or the university professor in his dual capacity as an officer of the board and local authority it throws upon him heavy duties which may conflict with those he has to carry out for his board, school, or hospital. It is, however, implicit in the argument which I have adduced above that the wider functions which he should rightly be expected to carry out in relation to public health and, in the case of the professor, to teaching and research can find their full expression only by such means. At the same time it is clear that much of the administrative day-to-day detail would inevitably fall to be performed by officers specially deputed for the purpose.

It would be implicit in the scheme, also, that a maternity and child-welfare committee of each area with representatives from board (regional or board of governors), local authority, and executive council would be set up to initiate and guide policy.

REFERENCES

Maternity in Great Britain (1948). Oxford Univ. Press.
Practitioner (1949). *The National Health Service Act in Great Britain.* London.
Report of the Working Party on Midwives (1948). H.M. Stationery Office, London.
Report on a National Maternity Service (1944). Royal College of Obstetricians and Gynaecologists. London.
Young, J. (1943). *Edinb. med. J.*, **50**, 474.

THE PSYCHOLOGY OF THE SURGICAL PATIENT*

BY

ALEXANDER KENNEDY, M.D., F.R.C.P., D.P.M.
Professor of Psychological Medicine, University of Durham

It is characteristic of the mature surgeon not only that his management of a case is based on a sound knowledge of pathology but that his clinical experience has given him an empirical but none the less valuable understanding of human nature. It is because he has taken into consideration all the factors—surgical, pathological, and human—which may affect the outcome that he sometimes obtains a better functional result than a junior colleague whose theoretical knowledge and operative technique are more polished than his own. In diagnosis and in preparatory and post-operative treatment he has learned to think of the patient as a functioning unit in which each component makes its contribution, however indirect, to the health of the whole.

Mind and body are interdependent, and when any serious surgical procedure is contemplated the patient's attitude to his disability must always be considered, and its probable effect on the outcome. For if psychological factors do not demonstrably affect the leucocyte response or the speed of bony union they can undoubtedly augment or destroy the will to live through severe shock or prolonged sepsis. They may influence profoundly the patient's keenness to regain normal muscular function when the plaster is removed from a fractured limb. No surgeon will embark on a prostatectomy without a careful assessment of renal function, and this may have to be improved before the main operation is performed. In the same way no reparative procedure requiring the patient's co-operation in the rehabilitation phase should be undertaken until his willingness and competence to give that co-operation have been estimated. A few bedside inquiries about his attitude to treatment both in the past and at the moment are usually enough. Evidence of poor function in this respect may well be a contraindication to surgery or may call for pre-operative adjustment. If he is to inspire confidence, the surgeon's attitude to his patient must be one of interest and understanding combined with a certain healthy detachment. There is no reason why the making of a few inquiries about the patient's life and personal problems need disturb this relationship.

It is permissible to those in charge of patients with psychiatric disorders to carry out first-aid when it is needed, or even a little minor surgery. In the same way the treatment of transient unhappiness, ungrounded fear, uncertainty, and laziness are the legitimate concern of the surgeon. Their pathological counterparts, depression and anxiety, however, need expert assessment. There is usually little difficulty in distinguishing between the passing gloom, discontent, or worry which is part of the average man's attitude to life, and the irrationally gloomy view of the depressive or the persistent tension of the anxiety state. Such cases are beyond the scope of psychiatric first-aid.

The Patient's Viewpoint

Patients are far more impressed by what the surgeon says to them, by how much he hurts them, and by how much he appears to understand their individual difficulties than by the most skilful arts he can practise on their unconscious bodies. Few can understand the rationale of their treatment, and the comprehension which they lack must be replaced by confidence in those who are caring for them. If too much is not to be asked of this faith the patient should be told in simple terms why he is having the treatment and what he may expect from it. He will want to know if his condition is dangerous, if it is likely to lead to disablement, roughly how long it will last, and whether he is to expect any discomfort. While enough must be said to counter the often too-justifiable criticism, "They don't tell you anything," care must be taken not to convey dangerous knowledge. If ignorance is to be relieved it must be in terms which the patient can understand and is not likely to misinterpret. Given a little information he will be protected from rumours and false information obtained from his anxious inquiries of other patients. Beyond this, if the surgeon can demonstrate that he appreciates his minor difficulties and discomforts and if he can be made to feel that he is being treated as an individual rather than as a case, little more is necessary.

A major operation is a landmark in the patient's life, a point of reference from which events will be measured in time. The surgical intricacies and hazards mean little to him except in terms of hours spent in the theatre or the length of the skin incision. Since he puts his faith in the surgeon and his craft the excursion into the unknown which the operation entails acquires a magical quality. Once

*A postgraduate lecture given, by invitation of the Post-Graduate Medical Committee of the University of Sydney, at the Stawell Hall of the Royal Australasian College of Physicians on October 10, 1949.

committed to it he must believe in it as something which will, in return for a sacrifice on his part, relieve him of his troubles. One has only to note the subjective relief following an exploratory laparotomy for carcinoma of the stomach to realize the suggestive value of the ritual of a major operation. The patient's faith in the surgeon is that of a man who has no comfortable alternative to blind faith, and is illustrated by the way he will reinforce his belief by glorifying the operator in his conversation and interpreting his most trivial sayings as those of the man of steel he inwardly hopes him to be. The strong emotions involved in this relationship are of positive value in eliciting the patient's co-operation. It follows that the one way to bring about a negative attitude is to reveal lack of personal interest.

The average patient can, and sometimes has to, tolerate minor psychological traumata during his stay in hospital. He may have to lie, atropine-dry, outside the theatre door, only to be told that his operation has been postponed. A patient admitted with apparently similar symptoms may die in the next bed, or the words, "I am not going to hurt you," may be followed by an experience which shatters his faith in such assurances for all time. None of these incidents leaves any permanent effect on the majority of patients, but there are circumstances in which the psychological handling of a case may make all the difference to the functional result. Such moments may occur when the patient is critically ill or when his morale has been lowered by prolonged sepsis and the will to live is failing, when a series of operations is necessary, when pain cannot be avoided, or where the patient must be immobilized for long periods. When a discouraging disability has to be faced, such as blindness, paraplegia, or the loss of a limb, the method of revealing this to the patient requires great care. Only by finding an approach adapted to the kind of man who has to face the facts and by using it at an opportune moment can morale be maintained at its highest and with it the will to co-operate in re-educative treatment.

In determining the best way to tell a patient about his illness the three main variables are his intelligence, the degree to which he is a realist, and the extent to which he is prepared to trust the details to the surgeon. If the dull-witted man is trusting he will be less puzzled by his unfamiliar surroundings, and minimal reassurance will be necessary. If he is not prepared to leave the thinking to others he will begin to speculate about his bodily functions and their future. It is difficult for a medical man to realize how crude are the average citizen's conceptions of his own interior. Many have had to found their ideas on butchery, fiction, occasional first-aid talks, and, most important of all, advertisements for patent medicines. Each organ is often connected with some advertising slogan about an alarming disorder and is rarely thought of in terms of normal function. For this reason the greatest care has to be taken in using medical terminology lest it clash with the perverted nomenclature of hearsay and commerce. In this connexion the use of the word "chronic" is particularly misleading.

Cases of Poor Prognosis

Although the majority of patients are realists, the non-pathological mental mechanism of non-realization will come into play in many cases where the fact of disability or shortened life has to be feared. Relatively few patients with malignant disease ask, "Is it cancer?" unless they expect a negative answer, and it is the demonstrative neurotic and the hypochondriac who most often put this question. The intelligent patient with a neoplasm usually has a half-conscious suspicion of the truth, but he allows his attention to wander conveniently from the subject and may not wish to court an unfavourable reply by asking the question. In this case, unless he is failing to take his treatment seriously, the matter need not come up for discussion, at any rate with the patient himself. In the case of stable and intelligent men who must adjust their affairs and who prefer a realistic discussion to the anxieties of procrastination and uncertainty, frank discussion rarely causes more than a temporary depression. Suicide in such cases is rare indeed. It is the depressive who irrationally imagines he has cancer who is more likely to take his life.

In speaking to patients with a bad prognosis two principles are important: first, that it is rarely possible to practise deceit successfully on a patient for any length of time unless he himself half-consciously wishes to be deceived. Secondly, a prognosis in which there is a faint ray of hope—a light at the end of the tunnel, however dim, on which the patient can fix his hopes—is so much better for the patient's morale than an inactive pessimism that the latter, in fact, is rarely justified, unless it is to make him put his affairs in order in the interests of his family.

Hospital Routine—Sleep

Admission to a nursing-home or hospital ward involves for most patients translation into a world where almost every detail of daily routine is different from that to which they are accustomed. By the time the lights go down the new patient may find himself with an empty stomach, ripe for conversation, without privacy, and with a full bladder which can be relieved only by making himself conspicuous. He may have to suffer for fear that his personal needs may be expressed in unacceptable language. Even the comfort of pitch darkness may be denied him. By the time middle age is reached the onset of sleep is often hedged about by a variety of conditioned reflexes for which the appropriate stimuli are now suddenly and entirely lacking. The "good night" formula is missed, the hot bath or hot drink, the bedside book, the last cigarette, the accustomed pillow—each sensation which in ritual order contributes to the spread of inhibition in a nervous system healthily tired by the efforts of the day. Appreciation of these difficulties will help the patient materially to adapt himself to his new surroundings.

If a sedative is used it must be in order to initiate a new routine rather than to become a part of one. For this reason adequate dosage of a quickly acting drug given early is preferable to the belated dose which is so often given at an unnatural hour. In a small number of patients the establishment of a sleep routine is a major problem, and systematic inquiry has to be made to find out wherein the difficulty lies. The most trivial concession to the patient's personal habits may make all the difference. Where the patient is worried about the effects of his condition on his job or his family, means must be sought by which these anxieties can be allayed. They are as much a complication of the illness as sepsis or a pressure-sore, and may have as much effect on the outcome. If practical reassurance is not possible and anxiety persists, it may be kept in check during active surgical treatment by sedatives taken regularly for a planned period. If it fails to respond to such treatment psychiatric aid should be sought early rather than late.

Long-stay Cases

The management of patients who are in hospital for a long period requires great care not only because of the inevitable fluctuations of morale which occur but because of their tendency to become dependent and even child-like in relation to their attendants. Often this tendency is not

discouraged by the nursing staff. While trust and dependence are necessary in the acute stage of an illness, rehabilitation and the assumption of responsibilities with a view to return to normal life should begin as soon as the patient is physically well enough. A constant goal of return to normal responsibilities must be held out lest the patient becomes content with the dependence of the chronic invalid. The discomforts of a prolonged stay in hospital are better tolerated if it is evident that the surgeon knows of them and gives credit for them, but firmness is sometimes required if the patient becomes too exacting of sympathy. The value of purposeful occupation in these patients cannot be overestimated.

Where a permanent disability has to be feared there is no point in concealing a fact which must inevitably come out, and the patient must be allowed to find out about his future as soon as he is fit to do so, in order that he can begin his adaptation to it while still in a protected hospital environment.

Effects of Drugs

When use is made of drugs which may cause temporary depression it is important to appreciate the patient's feelings. Sulphapyridine and emetine are good examples. When the patient is seen to be expressionless and gloomy, the fact should be remarked upon and the cause and temporary nature of the gloomy mood explained to him. Otherwise he may easily think that some permanent change has come upon him and fear that he is becoming insane. In a patient liable to depression these drugs may cause suicidal thoughts, but if he is reassured that he will sleep and feel normal in a few days little harm is done. It is to be noted that alcohol usually makes this type of pharmacogenic depression worse and that amphetamine may cause severe agitation if used in an attempt to correct it.

Another mental state for which allowances must be made occurs in a certain proportion of patients who are premedicated with morphine and hyoscine. Here mistakes are more often made by theatre staff than by the surgeon himself. The patient must be left as quiet as possible, and normal conversation is not to be expected of him. He is often without sense of time, and amnesia after the event is quite frequent. Such a patient should never be asked to decide any question or given any instructions to be carried out later on, and the mention of relatives or children or other delicate material may produce an emotional outburst of which he may afterwards be ashamed. The fact that he is conscious must be recognized, as he may be disinclined to move, but he should not be allowed to do anything for himself. If a local analgesic is being used it is important to explain in a general way what is being done and when each step is about to begin. The patient need not be encouraged to answer lest he become talkative, but it must be remembered that, although pain is not felt, the sensation of something being done is alarming in the absence of some sort of explanation and reassurance. While a great deal of this minor psychological care is carried out by the nurses if they are well trained, it is essential that the surgeon assure himself that his staff are well mannered and considerate in this respect.

In the post-operative period the daily call at the bedside may not be of long duration. For the patient, however, it is an important moment and his opportunity to mention matters about which he is not at ease. On these occasions the house-officers or nurses may often wish to save time by doing his talking for him. The fact that some direct interchange takes place between patient and surgeon on each of these occasions is an essential part of their relationship. While there is no need to take long, the surgeon should if possible convey the fact that he is aware of the patient's viewpoint and that he has not lost interest. On these occasions the patient may mention symptoms such as hiccup, heartburn, or dry tongue, which may appear to him unworthy of complaint. These conditions may nevertheless cause great distress in a bedridden patient, and successful treatment of them will do much to increase confidence. Experience alone teaches ways of dealing with the talkative patient, but it is a sound rule to remember that an early escape leaves behind no more disappointment than a late one.

Pain

It is not often necessary for a patient to suffer severe pain. In acute pain of recent onset, where diagnosis is certain and it is known that the cause will soon be removed, there need be no hesitation in giving analgesics in adequate amounts. If, however, there is danger that a dulling of the patient's senses may render him unable to appreciate and describe his symptoms, caution must be exercised during the period of observation. In non-severe pain the use of the milder analgesics has no dangers provided that they are discontinued the moment the pain has gone. There is a tendency in surgical wards for this kind of drug, once it has been prescribed, to be accepted without protest by the patient even when not in pain, lest if he refuse it there will be none available should the pain return.

The number of mild analgesics is small, but their combinations, pharmacopoeial and proprietary, are legion. With the latter, it is better to know the content of a tablet or capsule than to be gulled by the neologisms of the descriptive literature. Aspirin, amidopyrine, and phenacetin are analgesics the effects of which are enhanced by efficient combination with each other, with barbiturates, and with small doses of codeine. Though safe enough, they are not, however, effective against severe pain, and it must be remembered that any drug, natural or synthetic, which will relieve severe pain is also potentially habit-forming. The period during which morphine derivatives and their synthetic analogues may be given without danger in this respect varies with the personality of the patient and the degree to which he has been rendered vulnerable to addiction by continued pain, exhaustion, or worry. It is difficult to make an addict of the average Briton, but if any drug of the morphine group is given often enough not only will tolerance be established, necessitating increased dosage, but withdrawal symptoms, including increased sensitivity to pain, will appear if it is discontinued.

In certain vulnerable personalities in whom pleasurable sensations are produced by the drug as well as analgesia, addiction may be established very rapidly indeed. If morphine is given more than occasionally for trigeminal neuralgia, for instance, it must be only as a preliminary to alcohol injection or root resection. If it is given in sciatic pain due to malignant disease, and cordotomy is not feasible, it may be necessary to continue in increasing doses until the patient's death. Addiction is of little importance in the patient where the end is in sight, but tolerance to the only drugs which are really effective against pain is disastrous. Since it may take less than six months for a patient to reach a point when 15 gr. (1 g.) of morphine daily will have relatively little effect, the importance of using nerve-blocks, sections, and cordotomies at an early stage is evident. If they are carried out only after a long period under analgesics they will have no effect on the addiction and the drugs will have to be continued.

In continual or recurrent pain much of the suffering is due to anticipation of future pain, either at the next attack or when the analgesic has worn off. This anxiety

may require treatment by means of barbiturates if the patient is to get enough sleep, but care must be taken to choose those which are least likely to cause confusion when taken over a long period. Where other measures have failed, in such conditions as malignant disease of the jaw or skull, prefrontal leucotomy will in successful cases remove the dread of future pain and allow the patient, while still feeling the pain, to be indifferent to it, to gain weight, and to adopt a mildly euphoric attitude towards his future.

Psychiatric Emergencies in Surgical Cases

From time to time the stress of illness and its surgical treatment acts as the precipitating factor of an acute psychological disturbance. The aged are especially vulnerable, and those concerned with the treatment of cataract are used to dealing with states of confusion and agitation occurring in the week following operation. Few of such patients are transferred to mental hospitals, because ophthalmologists are aware that with kindly and efficient nursing the patients are likely to recover completely and that such a transfer might jeopardize the success of the operation. It can safely be said that by far the greater number of acute psychiatric emergencies occurring in patients in surgical wards are likely to subside with good management within a few hours to a point when at least they do not disturb other patients.

The appearance of mental symptoms may be the signal for seeking expert assistance or for transferring the case to a ward where mental nursing is available, but it is no reason for relaxing the standard of surgical care or exposing the patient to hazard by a removal to another hospital reminiscent of the hasty banishment of the insane in less enlightened days. The greater number of psychotic episodes occurring in surgical wards are toxic in origin. While shock, sepsis, and metabolic change may be the cause of confusional states, drugs also often enter into the aetiology. The unstable patient who makes heavy weather of his discomforts may, as the result of injudicious sedation, become muddled and inclined to wander out of bed, especially if poor renal function, exhaustion, or sepsis increase the tendency to nocturnal delirium. Drug idiosyncrasies and post-operative excitement due to the release effect of narcotics given in association with anaesthesia are not usually difficult to recognize for what they are. Here again a few hours' patience may see the condition subside.

From time to time acute anxiety, panic, or hysterical behaviour may be seen in patients for whom the psychological strain of illness is too great. Incidents of this kind are seen where a series of operations must be performed, where a patient realizes that his patience and suffering are not going to be rewarded by recovery, or where it is becoming evident that pain cannot be fully controlled. The majority of these are episodic, and the condition subsides if the patient is listened to and reassured. If normal mental defence mechanisms do not then come into operation by which the patient ceases fully to realize his situation his will to live may rapidly decline. The house-surgeon who really knows his patients can do much to prevent such episodes, and time spent at the bedside at a critical moment may give the encouragement which is all that is needed to restore the patient's morale. Experience of such situations is a most important part of his training.

Interpretation of Symptoms

In surgical diagnosis it is not always possible to be guided entirely by the results of objective examination, and some reliance has to be placed on the symptoms as the patient describes them. Quite a number of patients minimize their pain or disability to an extent which renders diagnosis difficult. A man in first-class physical condition and keen to be back at work may during the examination ignore his pain to such an extent that the surgeon may be led, after a cursory examination, to be satisfied that the damage is slight. The convention of understatement can be carried to great lengths by patients whose morale is high, and the amount of suffering which they will endure rather than risk a reproof for needless complaint may be very great indeed.

There is no criterion of bearable pain. Tight plasters and haemorrhage in wounds may be revealed too late because the patient does not wish to be a nuisance to an overworked nurse or because he fears the ward sister's ridicule. Another cause of minimization is seen in the patient who is reporting symptoms which he fears are indicative of a serious disease but who is so unwilling to face the fact and so eager to receive reassurance that he "forgets" to mention part of what he has noticed. If the effects of this mental mechanism are to be neutralized the patient must be pressed for more information and, if necessary, warned that if there is any condition requiring treatment it is better to treat it early. It is just such a mental process which may cause fatal delay in the diagnosis of malignant disease.

Leaving Well Alone

A certain number of patients who are sent for surgical advice have called attention to the symptoms of which they complain in the hope that this will lead to a ventilation of some other trouble about which they hesitate to take advice direct. Some of those who present themselves with small varicoceles, for instance, are in reality seeking advice and reassurance about their sexual functions, and the varicocele would be unnoticed were it not for their preoccupation with the subject. Explanation and reassurance will often rapidly remove the symptoms and their cause. A patient who asks for a cosmetic operation which seems hardly necessary may reveal when pressed that he thinks everyone is looking at his unusual nose, his bow legs, or his thick lips. Experience shows that it is unwise to operate in a case which would not normally justify surgical intervention and in which the disability is bound up with a pathological mental attitude. Too often the surgeon, hailed at first as a saviour, eventually joins the list of persons by whom the patient believes himself to have been victimized and, in this case, mutilated. The individual in sound mental health has no desire, conscious or otherwise, to have any more to do with the surgeon than is absolutely necessary. In the patient of abnormal personality, however, the principle that the symptoms must be causing real distress if he is willing to have an operation in the hope of relieving them is not always applicable.

The motives underlying a pathological desire to submit to operation are not necessarily buried deep in the unconscious. To the harassed housewife a fortnight in bed following a confinement is heaven, and an operation is a small price to pay for a similar respite. A man about to be married may convince himself that an abdominal pain is due to appendicitis if he is also possessed of grumbling doubts whether he means to go through with the ceremony. In other cases the motive is less clear. The patient may be seeking a magical way out of psychological difficulties which he prefers to face in somatic form, or he may seek in the operation a token suicide or a surrogate mutilation.

The dangers for the surgeon who prefers action to thought are great indeed. Refusal to operate may create difficulties of its own. The surgeon may have to explain away his inaction to the patient. If he then makes an

effort to find out the real cause of the trouble, the patient may resent his questions and may, in any case, decide to go to someone else. Nothing perhaps brings out the best qualities in a mature surgeon more than the decision to leave well alone.

Functional Disabilities in Surgical Practice

No clear dividing line exists between the different forms of functional disability. Criminal malingering is rare in mentally healthy individuals. Simulation and hysteria frequently coexist, and the tendency to malinger may often, in fact, be one of the clinical features of a hysterical psychopathic personality. In the whole group, from minor purposive exaggeration to gross hysteria, the central motive of advantage through illness is the same, though the personality of the patient, the degree of deliberation, and the exciting causes may differ widely. For clinical purposes it is convenient to distinguish between conversion hysteria, the functional superstructure group, and traumatic hysteria, although features of each of these may be found in the same patient.

In conversion hysteria the patient's personal problems have produced in him a state of tension which he is unwilling or unable to bear. He is attempting to solve or suspend his problems for the time being by becoming incapacitated. In acute cases disabilities such as aphonia, paraplegia, and functional paralysis are the most common, and they are difficult to recognize for what they are only when there is a coexistent organic lesion. In less acute cases the patient may base his symptoms on some minor deformity which would not cause him to complain if he did not help his problem by so doing. Many patients with hammer toes, hallux valgus, or varicose veins ask for treatment for motives of this kind, and return of normal function is invariably slow, however great the structural improvement, because their co-operation in post-operative re-education and rehabilitation is half-hearted.

Patients whose will to health was great before admission to hospital will sometimes, while in hospital recovering from an illness or injury, come to realize that the consequences of a rapid recovery are not necessarily pleasant. Recovery is retarded, and a superstructure of functional disability makes its appearance. This is particularly common where there is any ambiguity in diagnosis or where the patient is able to take advantage of situations in which improvement has to be judged largely by his own reports. Nerve injuries are the best example of this, and the combination of organic paralysis and anaesthesia with functional additions and perpetuations is fairly frequent.

When a minor injury is followed by an overlay so extensive that the organic disability is by comparison trivial, the case has assumed the characters of a traumatic hysteria. In cases of this kind the diagnosis is made not so much from the physical signs as by the patient's attitude to his symptoms. The most characteristic features are the indifferent or "take it or leave it" manner of presenting the disability and the coexistence of other nervous symptoms, such as headache, lack of concentration, and insomnia. Hysteria is to be distinguished from simulation by its negative character. The hysteric has drifted into believing that he has more disability than is present because his morale is such that he lacks the urge to make a positive effort to prevent himself from doing so.

Effects of Negotiations for Compensation

Once the initial excitement associated with an accident has died down and any element of danger to life has passed, the patient has time while in hospital to think of other aspects of his injury. In order to obtain his rights in the matter of compensation it is necessary for him to demonstrate that he is incapacitated in some way, and he is not always sure that the surgeon will represent his case in the most favourable light from this standpoint. Among industrial workers the Ministry, corporation, or insurance company who pays compensation is often regarded as engaging in a sporting contest with the employees' representatives and solicitors, and the patient feels an obligation to give his side all the support he can. Even in the absence of a desire for a short holiday with pay or of conscious desire to misrepresent the extent of permanent disability, the injured may feel, after a week or two in hospital and a visit from a solicitor, that it would be unwise to claim that he has made a complete recovery before he is absolutely certain of it. This element of caution may conflict with the desire to return to normality as quickly as possible, and surgeon and lawyer may have conflicting interests in their desire to bring the case to a successful conclusion. It is essential that the patient should have as little to do with these negotiations as possible, and that his rehabilitation-morale should not be lowered by too much discussion of his case with visiting workmates.

In individuals with a predisposition to neurosis who have previously been well adjusted in suitable employment, the neurotic pattern of response can sometimes be facilitated by involvement in a compensation case to such an extent that the problem of their rehabilitation becomes almost entirely a psychological one. The surgeon should be fully aware of these possibilities, and a few words in the course of an examination may stiffen the patient's resistance to the unconscious temptation to exaggerate symptoms and to withhold co-operation in physiotherapy. Prevention is far easier than the treatment of the established condition. It is important that expert aid be called for before the process has advanced too far. Exact diagnosis, absence of delay, and ambiguity, together with a show of firmness when it is felt that the patient is not giving the fullest co-operation, are the best means of prevention.

In the period during which the patient's attitude to his illness is being formed he will be greatly influenced by everyone with whom he comes in contact. For this reason the maintenance of a high morale, especially in orthopaedic wards, is of direct concern to the surgeon. The commencement of rehabilitation and occupational therapy at the earliest possible moment will leave little time for idleness and grumbling, and will create an atmosphere in which the potential hysteric cannot flourish.

Conclusion

It is probable that temperament has at least as much to do with the choice of surgery as a profession as has technical aptitude, and it may be for this reason that it is in the surgical wards that the human approach is sometimes less in evidence than elsewhere. The purpose of this article is not to add anything new but to draw attention to the fact that modern surgery is a descendant of the Hippocratic art and that "it is the duty of the healer not only to do that which immediately behoves him, but to secure the co-operation of the patient, of those in attendance, and of all external agents."

Major-General Malcolm C. Grow, Surgeon General of the United States Air Force, retired on November 30 after more than 31 years' service. He was succeeded by the Deputy Surgeon General, Major-General Harry G. Armstrong. General Grow was a pioneer in the development of airborne medical equipment and of body armour.

TREATMENT OF THE CONCEALED ACCIDENTAL HAEMORRHAGE OF PREGNANCY

BY

DERK CRICHTON, M.B., Ch.B.

Dominion Assistant, Nuffield Department of Obstetrics and Gynaecology; late Full-time Assistant, Department of Obstetrics and Gynaecology, University of Capetown

The object of this paper is to compare the results of different treatments used for the severe or "concealed" form of accidental haemorrhage of pregnancy; the observations on which it is based were made in the Peninsula Maternity and Groote Schuur Hospitals, Capetown.

Incidence

Before discussing the main topic it is interesting to record the incidence of accidental haemorrhage and to note its relation to the incidence of eclampsia.

Accidental haemorrhage (all cases) accounted for 2% of all admissions to the above hospitals; and the severe or concealed variety for 0.7%. This incidence is considerably in excess of that reported by workers in other centres (Table I). For instance, at the Queen Victoria Hospital, Johannesburg, where the selection of admissions is comparable, the corresponding figure for concealed accidental haemorrhage is 0.04%. It is interesting to find that a similar disparity also exists with regard to eclampsia admissions, which amount to 1.8% in the former institution and 0.3% in the latter. The altered incidence of both conditions supports the view that accidental haemorrhage and eclampsia are in some way related and perhaps have a common aetiology. Cases of ante-partum haemorrhage occurring at the Peninsula Maternity Hospital are classified in Table II.

TABLE I.—*Incidence of Accidental Haemorrhage with Attendant Maternal and Foetal Mortality*

Author	No. of Cases	Incidence %	Maternal Mortality %	Foetal Mortality %
Baird (1936)	1,160	0·4	4·8	—
Bland and Rakoff (1938)	2,319	0·93	6·0	70·0
Brodhead (1927)	34	1·1	8·6	61·5
Cosgrove and Conway (1941)	236	0·7		
Crichton (all cases)	388	2·0	4·4	75·0
Crichton (concealed only)	120	0·7	10·9	100·0
FitzGibbon (1926)	115	0·2	9·5	—
Goethals (1928)	128	1·06	8·6	61·5
Gustafson (1945)	54	0·3	0·0	58·6
Harrar (1932)	254	0·25	7·5	72·5
Kraul (1937)	27	0·2	7·4	62·9
O'Regan (1943)	93	0·3	3·2	5·2
Polak (1931)	16	1·3	6·2	87·5
Van Wyck (1943)	114	1·0	3·2	50·0
Watkins (1941)	30	0·2	4·1	67·0
Williams (1925)	57	0·63	7·5	72·5

TABLE II.—*Ante-partum Haemorrhage at the Peninsula Maternity Hospital*

Cause	No. of Cases	%
Haemorrhage of unexplained origin	204	1·1
Accidental haemorrhage	388	2·0
Concealed accidental haemorrhage	120	0·6
Placenta praevia	325	1·6

In some previous reports haemorrhage of unexplained origin has been misleadingly classed as accidental haemorrhage.

Analysis of 120 Cases

For the purpose of the present analysis 268 of the series of 388 cases of accidental haemorrhage were discarded because they were not of the severe concealed variety and their inclusion would have impaired evaluation of the merits of different forms of treatment.

The severe shock manifested in the remaining 120 cases was not due to revealed blood loss. In only six was the systolic blood pressure above 90 mm. Hg, and these patients were subsequently shown to be markedly hypertensive.

The average age of the 120 patients was 35.8 years. Multiparae numbered 109 (90.9%). The average parity was 5.5 and the gravidity 6.3, which excludes a high rate of previous abortion among these cases.

Albuminuria and/or hypertension (a systolic pressure above 140 and diastolic pressure above 90 mm. Hg) were found to be present in 95% of cases, and three of these were associated with eclampsia. This incidence of toxaemia is high, and is approximated only in Couvelaire's clinic, where 91.3% of cases were reported to have toxaemia.

The clinical observation of a relatively slow pulse rate, considering the gravity of the patient's condition, was originally mentioned by Gibberd (1948) and was substantiated in almost 80% of the present series of cases, although a tachycardia later developed in those not responding to treatment.

TABLE III.—*Details of the 13 Fatal Cases*

Age	Maturity (Weeks)	Clinical Features	Cause of Death
40	36	Conservative treatment of shock and associated eclampsia. Blood transfusion given. Died on 9th day	Bilateral renal cortical necrosis. Necropsy
21	28	Conservative treatment of shock and associated eclampsia. No blood transfusion. Died undelivered	Shock and eclampsia; ? associated cerebral haemorrhage. No necropsy
41	40	Conservative treatment of shock. No blood transfusion. Low forceps delivery	Haemorrhage after delivery of placenta
39	39	Conservative treatment of shock. No blood transfusion	Haemorrhage after delivery of placenta
30	38	Conservative treatment of shock. Blood transfusion. Treatment of severe urinary suppression, which was improving when death supervened	Pulmonary embolism with evidence of regenerating bilateral renal cortical necrosis. Necropsy
36	40	Conservative treatment of shock. Blood transfusion. Died undelivered	Shock and gross malnutrition. Necropsy
40	34	Conservative treatment of shock. Blood transfusion. Severe urinary suppression	Bilateral renal cortical necrosis. Necropsy
42	39	No treatment of shock. No blood transfusion. Artificial rupture of the membranes in the presence of contractions. Precipitate labour	Shock and haemorrhage after delivery of placenta
25	32	Shock therapy, blood transfusion, pituitary injections, tight binder. Membranes punctured in absence of contractions. Increased shock	Haemorrhage after delivery of placenta. Shock
37	38	Shock therapy, blood transfusion. Artificial rupture of the membranes in absence of contractions. Increased shock, caesarean section	Bilateral renal cortical necrosis. Necropsy
38	38	Shock therapy, blood transfusion, oxytocin injections, abdominal binder. Membranes artificially ruptured in absence of contractions. Further deterioration in condition. Caesarean hysterectomy	Shock and haemorrhage
35	35	Shock therapy, blood transfusion, pituitary injections, abdominal binder. Artificial rupture of membranes in absence of contractions. Died undelivered after three hours	Shock and further concealed haemorrhage
39	40	Shock therapy, no blood transfusion, pituitary injections, abdominal binder. Vaginal plugging removed; membranes artificially ruptured in absence of contractions. Died undelivered after six hours	,, ,,

As was to be expected from the type of case dealt with, the foetus invariably died—usually before the institution of treatment. The maternal mortality was 10.9% (13 cases). Details of the fatal cases are given in Table III. The forms of treatment used will now be discussed in detail.

Treatment

Shock.—In 115 cases in which the treatment of shock preceded any other form of treatment there was partial

recovery from shock in all but two instances in which the patients died within a few hours. The partial recovery was usually maintained, but in a small number of cases the clinical condition again deteriorated despite treatment, or perhaps because of it. Shock was treated by keeping the patient moderately warm in bed, by morphine injections, and by intravenous glucose-saline solution. The blood was grouped and haemoglobin estimated, but the latter reading was considered in conjunction with the clinical assessment of the anaemia because of the incongruous readings that were often obtained. Blood transfusion was not employed *per primam*, and special importance was attached to cross-typing in these patients. The results of more extensive use of blood transfusion in recent years are interesting. Before 1939 only 12.5% of patients with concealed accidental haemorrhage received blood transfusion; since that date the proportion has been 77.7%. Despite this increased use of transfusion there was no substantial difference in maternal mortality in the two series.

Shock followed by Simple Rupture of the Membranes when Contractions Supervened.—In this group the treatment was conservative; particular importance was attached to half-hourly pulse records, to haemoglobin and blood-pressure readings, and to measurement of the girth of the abdomen and height of the fundus uteri. The detection of uterine contractions or onset of vaginal bleeding was regarded as an important guide both in prognosis and in treatment. Of the 120 cases, 88 (73%) were treated by this method; among these, seven patients (8%) died.

Necropsy on three of the patients who died revealed evidence of long-standing renal disease upon which bilateral renal cortical necrosis had been superimposed. Two of the deaths were due to haemorrhage occurring after delivery of the placenta and one to pulmonary embolism on the ninth day. Two of the patients died undelivered—one with supervening eclampsia, the other with gross malnutrition. Neither patient responded to treatment of shock, and in both the condition deteriorated progressively until death occurred before delivery.

In 32 of the 88 cases the membranes were artificially ruptured in the presence of definite uterine contractions. The average admission-delivery time in these cases was almost five hours less than that in the remainder. Two maternal deaths occurred, both from haemorrhage after delivery of the placenta: in each case delivery had been precipitate following puncture of the membranes.

Initial conservative treatment was followed by caesarean section in four cases—an incidence of 4.5%. Contractions failed to supervene in these patients, and the clinical condition deteriorated after an initial response to shock treatment. All four patients survived.

Shock followed by Artificial Rupture of the Membranes, Application of Willett's Forceps or Vulsellum to the Scalp, and a Tight Abdominal Binder.—This treatment was employed on four occasions without maternal mortality. In one patient external bleeding ceased but shock increased; the abdomen enlarged, became more tender, and contractions ceased. The vulsellum slipped off at an early stage, but the patient made a slow recovery with blood transfusion, delivering herself spontaneously 12 hours later. The same complication occurred in the fourth case, but the patient's condition did not respond to conservative measures and 10 hours later caesarean hysterectomy was performed. This procedure has been condemned by many writers, including O'Regan (1943), whose findings were similar to these.

Artificial Rupture of the Membranes in the Presence of Definite Contractions without Preliminary Treatment of Shock.—This was performed on five occasions and one death occurred. In the fatal case delivery occurred 45 minutes after puncture of the membranes, but a mild haemorrhage following the birth of the placenta was sufficient to kill the patient, who was already in a critical condition. Another patient almost died from increased shock when a precipitate delivery followed artificial rupture of the membranes. Although this group of cases is small and therefore unsuitable for statistical analysis, the results are not encouraging, and from the mere fact that this treatment is contrary to a golden rule of surgery it should be regarded with suspicion. Berkeley, Bonney, and MacLeod (1938) censured the procedure in these terms: "A patient obviously suffering from shock should not be subjected to an operation except in a desperate attempt to save life."

Shock followed by Artificial Rupture of the Membranes in the Absence of Contractions.—Twenty-three patients were included in this group. Treatment for shock was instituted, and injections of "pituitrin," or, more recently, "pitocin" (oxytocin), were given before and after puncture of the membranes. A tight abdominal binder was applied. The maternal mortality was 21.8%; in the five patients who died artificial rupture of the membranes had been followed by a pronounced increase in the degree of shock. The first two patients died undelivered. Haemorrhage after delivery of the placenta caused the death of the third patient, who was already in a critical condition. Deterioration in the general condition following puncture of the membranes was taken as an indication for caesarean section in the last two patients, one of whom died within 24 hours and the other on the ninth day. Of the 18 patients who survived, five suffered a marked increase in shock within an hour or two following puncture of the membranes, but rallied with the aid of copious blood transfusion.

The enormous quantity of retroplacental clot which escaped after delivery of the foetus in these patients bears out the supposition that further intrauterine bleeding is likely to occur after artificial rupture of the membranes in the absence of definite uterine contractions.

It must be emphasized that it is often most difficult to decide whether or not the uterus is contracting. In many instances contractions are noted only when the patient is approaching the second stage, and labour is mistakenly regarded as precipitate. Even by means of tocographic tracings Murphy (1942) was sometimes unable to detect uterine contractions in patients with concealed accidental haemorrhage in whom cervical dilatation was proceeding. The clinical diagnosis of labour by actual uterine palpation is less reliable in these cases than observation of the general reactions of the patient or the results of vaginal or rectal examinations. A sero-sanguineous vaginal loss is often the precursor of detectable contractions.

Vaginal Plugging.—This treatment was not employed, but four patients were admitted with the vagina plugged with a few feet of loosely packed gauze. Hastings Tweedy, the great advocate of this method of treatment, emphasized the importance of tightness when packing the vagina, and recommended the use of pledgets of cotton-wool. As generally employed, vaginal packing fails to reach this standard of tightness.

Shock followed by Caesarean Section or Caesarean Hysterectomy.—Two patients died following an abdominal operation performed for progressive deterioration of the condition after artificial rupture of the membranes in the absence of uterine contractions. One of these was a

case of caesarean hysterectomy. Among the five cases that survived, one caesarean hysterectomy was performed following application of a vulsellum to the scalp. In the remaining four, caesarean section was performed 12 to 24 hours after the institution of conservative treatment. The indication for the operation was the continued absence of contractions and progressive deterioration in the patient's condition.

Discussion and Deduction from the Results of Treatment

Regarding treatment, Gibberd (1948) says: "When the aetiology of a condition is obscure the treatment is often prejudiced if an aetiological approach is attempted." Now, in most medical centres, cases of concealed accidental haemorrhage are not common enough to enable individual workers to obtain extensive personal experience of treatment. Misleading impressions are then apt to be formed, particularly if records are compiled which include mild cases of haemorrhage—cases which, in the words of the late Sir William Smyly, "are of little moment," and which respond well, little matter how treated. The masking of the severe by the mild case has had the unfortunate consequence of deflecting attention from the special treatment required by the severe case—the mortality of which, according to Greenhill (1947) may be as high as 25%. It is therefore of the highest importance to consider the two conditions separately.

In concealed accidental haemorrhage shock gains a ready hold, because the majority of cases occur in the hypertensive toxaemia group of patients, who are known to be particularly susceptible to shock. The advisability of treating shock before performing any other treatment is indicated on general surgical principles, and this belief is strengthened by the results in the present series of cases.

Initial treatment of shock was by means of intravenous glucose-saline solution, usually followed by blood transfusion. The quantity of blood transfused was in accordance with an estimate of the blood which had been lost. Scott (1947) drew attention to the difficulty of assessing the amount of circulating blood which had been lost, and I have come to regard over-estimation of the requirement as a common mistake.

It has been shown earlier that blood transfusion has produced no obvious reduction in maternal mortality in concealed accidental haemorrhage. These findings are in accordance with those of Sheehan (1942), who analysed the results of blood transfusion at the Glasgow Royal Maternity Hospital. His figures showed that the death rate from haemorrhage complicated by shock was only slightly improved as the result of blood transfusions, but that death from shock with minor haemorrhage, or no haemorrhage at all, remained quite unaffected.

The danger of rupturing the membranes in the absence of contractions was stressed by Gordon Ley (1921), but apart from this publication there has been little mention of the danger of this form of treatment. The advocates of the method hope that oxytocin will ensure subsequent contractions of the uterus. The less severe the accidental haemorrhage the more likely is it that this hope will be realized. On the other hand, the results of the present analysis indicate that the method is likely to fail if employed in the severe case. Rupture of the membranes in the absence of contractions was attended by a maternal mortality of 21.8%; and of the surviving patients about 25% almost died after this method of treatment. This result compares unfavourably with the maternal mortality of 8% obtained in cases treated conservatively.

It would seem that the more severe the case of concealed accidental haemorrhage the more dangerous is it to rupture the membranes in the absence of contractions. Because the converse holds true, and because the converse refers to the common type of case, many authorities have overlooked the potential danger of this line of treatment in severe cases. Gordon Ley (1921) summarized by saying: "Rupture of the membranes is usually fatal and should play no part in the treatment of this condition."

Vaginal plugging has been widely condemned in the literature, so further discussion is superfluous. The increased dangers of sepsis and shock produced by effective vaginal plugging render this treatment obsolete.

The treatment of concealed accidental haemorrhage by means of caesarean section has many advocates. In a series of 49 caesarean sections without maternal mortality Miller (1941) had extended the indication to comparatively mild cases. Falls (1934) and Bland and Rakoff (1938) maintained that surgery is supreme in the treatment of severe cases. Kellogg (1945) found that in his series maternal mortality from abdominal hysterotomy equalled that of vaginal delivery; but half of his death rate among vaginal deliveries was made up of cases of post-partum haemorrhage. Greenhill (1938) criticized the routine employment of caesarean section by quoting a taunt levelled against caesareanists of a previous generation: "They do perceive Gordian (obstetric) knots and, like Alexander, try to cut them." Irving (1938), by substituting conservative for radical measures in his clinic, reduced maternal mortality from 14.5 to 2.9%, a result similar to that of de Snoo (1936). Gibberd (1948) maintained that indications for surgery must be very exceptional, and FitzGibbon (1926) thought that a patient incapable of recovering from collapse was far less capable of recovering from an operation.

The present analysis indicates that the more injudicious the previous treatment has been the more frequent will be the recourse to caesarean section. I believe that caesarean section has a small but definite place in treatment, the indication being the continued absence of uterine contractions and deterioration in the general condition of the patient after a number of hours of conservative treatment.

Although hysterectomy has a maternal mortality about double that of caesarean section (Table IV), this may be a rare necessity in a case in which the uterus will not contract at the time of operation. Phaneuf (1945) pointed out that in the "Couvelaire" uterus there is usually a non-haemorrhagic half-moon area of muscle situated transversely behind the bladder in an ideal situation for the incision in a transverse lower-segment caesarean section. A vertical incision, and particularly a classical caesarean section, will tend to bleed more, resulting in a higher incidence of caesarean hysterectomy and increased maternal mortality.

TABLE IV.—*Maternal Mortality Associated with Vaginal Delivery, Caesarean Section, and Caesarean Hysterectomy*

Author	Vaginal Delivery %	Caesarean Section %	Caesarean Hysterectomy %
Bland and Rakoff (1938) ..	4·1	11·2	—
Batizfalvy (1937)	—	16·1	35·3
Cosgrove and Conway (1941)	5·2	4·0	—
Crichton ..	10·1	20·0	50·0
Davis and McGee (1931) ..	4·1	11·4	—
FitzGibbon (1926)	10·7	25·0	66·0
Irving (1938)	2·9	14·5	—
Kellogg (1945)	15·0	15·0	—
Mahon (1938)	—	20·0	60·0
Van Wyck (1943)	4·0	10·0	—
Weymeersch and Snoeck (1937)	6·6	15·7	28·5

Treatment of Complications

The onset of revealed bleeding is a favourable prognostic sign, for it is a precursor of recognizable uterine contractions. The watery blood which escapes at the vulva is not a true haemorrhage, but merely the escape of blood previously retained in the uterine cavity, and attempts to effect haemostasis are not only superfluous but may do harm.

A vaginal examination was performed on almost all cases in the present series, and we agree with Harris (1937), who emphasized the importance of being prepared to proceed with an operative delivery should the diagnosis of concealed accidental haemorrhage prove incorrect. Our incidence of error in diagnosis was 4%.

To a patient who is suffering from shock and anaemia a relatively small post-partum haemorrhage may be fatal, and one-third of the maternal mortality in this series was due to this complication. Antecedent blood transfusion and less procrastination in effecting haemostasis after delivery have prevented maternal mortality from this cause in the past 10 years. I tried the preventive measure of giving intravenous ergometrine at the time of delivery of the anterior shoulder in 18 cases, but still encountered three severe haemorrhages. Greenhill (1947) mentions manual removal of the placenta in the treatment of these cases. The present series, however, was characterized by a very short third stage in which the placenta, already separated from the uterine wall by the pre-existing haematoma, often accompanied the birth of the foetus. Even gentle fundal pressure was seldom required.

The alarming quantity of blood lost at the time of delivery of the placenta was usually merely the escape of pre-existing clots with minimal fresh bleeding. The dangerous haemorrhage which was apt to occur was a steady ooze of rather watery blood after delivery of the placenta. The response to oxytocic drugs and fundal control was often disappointing, and those patients who received a hot intrauterine douche did not respond satisfactorily. Intrauterine plugging should not be a common necessity, but it proved to be the only effective haemostatic method in four cases. Faber (1945) recommended the routine use of intrauterine plugging as a prophylactic measure, but agreed with Gustafson (1945) that in some cases hysterectomy was the only method of achieving haemostasis.

Bilateral renal cortical necrosis was found in 30% of the necropsies performed in the present series. The incidence of anuria in all cases of concealed accidental haemorrhage was 11.6%. Whereas the treatment of suppression of urinary secretion has made great strides recently, owing to the work of Kolff (1947) and Bull *et al.* (1949), there is no recognized means whereby the incidence of anuria may be reduced in accidental haemorrhage. The excellent analyses of Gordon Ley (1921) and FitzGibbon (1926) make no mention of anuria among their cases. Goethals (1929) and Batizfalvy (1937) encountered an incidence of 4% and 2.8% respectively; and Greenhill (1938) remarked that he had no experience of anuria in ablatio placentae apart from a single instance in which eclampsia coexisted. These findings correspond with my own before 1939, when the incidence of anuria was 4.2%. Since 1939, however, the incidence of anuria was 16.6% in a 10-year period. Young (1949) reported an incidence of 25%, and publications in the past 15 years have devoted much more attention to the complication of anuria in concealed accidental haemorrhage than appeared in the literature before that time. The only aspect of treatment which has altered materially in recent years has been the introduction of intravenous fluids, and particularly blood transfusion—a fact that may be of some significance.

Kilduffe and DeBakey (1942) found the mortality of all haemolytic reactions, regardless of the severity, to be 57.7% in 43,284 blood transfusions, and Gibberd (1936) emphasized the care which should be exercised when administering blood in cases of concealed accidental haemorrhage. The mere fact that these patients are usually multiparae of high parity renders them more susceptible to blood-transfusion reactions.

Incompatible blood may be a greater danger if the patient with concealed accidental haemorrhage has pre-existing renal impairment with possible cortico-medullary shunt of the renal circulation superimposed. Sheehan (1947) found that the kidneys of patients who had died with concealed accidental haemorrhage nearly always showed lesions. FitzGibbon (1926) stated that all multiparae with severe accidental haemorrhage had chronic interstitial nephritis, and de Snoo (1936) found evidence of pre-existing renal disease in 16% in an analysis which included milder cases. Renal trouble of long standing was found at 50% of necropsies in the present series.

Duff and Murray (1941) analysed 71 cases of anuria and found that the presence of a few ounces of heavily blood-stained urine (obtained by catheter) was a premonitory sign in all cases. Such patients should be transfused with particular care. Marriott (1947) has stressed the disturbance of electrolyte balance which may result from uncontrolled intravenous therapy, particularly in the presence of urinary suppression, when the additional complication of water overload is a real danger.

Avoidance of unnecessary blood transfusion in cases of concealed accidental haemorrhage is obviously most important, and the findings of Irving (1938) that substitution of conservative for radical treatment in accidental haemorrhage reduced the incidence of blood transfusion from 27.5 to 11.7% is yet another strong argument in favour of conservative treatment. On the other hand, that judicious blood transfusion is of value in selected cases is beyond all doubt. Not only will this aid in the prevention of death from post-partum haemorrhage, but renal function, which is known to be dependent upon a good oxygen supply, will undoubtedly benefit from the correction of a definite anaemia. It follows that it is also a wise precaution to administer continuous oxygen to every case of concealed accidental haemorrhage. High oxygen tension should be regarded as an important safeguard in anaesthesia in these patients should that prove necessary.

Attention to the considerations mentioned may help to reduce the incidence of anuria. Early detection of this complication may permit successful treatment by means of splanchnic block or other methods of relieving arterial or venous spasm; and Bull *et al.* (1949) have stated that even in an established case early efficient treatment would render the mortality from anuria negligible. In concealed accidental haemorrhage, however, such hopes should be tempered by a realization that the exact cause of the condition is unknown and that damage is inflicted on kidneys whose reserves have probably been impaired by preceding disease.

The ultimate prognosis after accidental haemorrhage is not good. Stroink (1934) found that 51% of patients had developed arteriosclerosis, nephritis, or apoplexy in a follow-up extending from two to twenty years. De Snoo (1936) conducted a similar analysis and found 61% to be hypertensive. In more severe cases the prognosis is worse, and the follow-up of these patients is therefore highly important.

Conclusions

The most important aspect of the treatment of concealed accidental haemorrhage is the treatment of shock.

Transfusion of incompatible blood and intravenous injection of uncontrolled quantities of blood and other fluids contribute to the mortality of these patients.

Routine administration of continuous oxygen, avoidance of surgical treatment capable of causing shock, and care with intravenous therapy will reduce the incidence of anuria.

Certain complications, notably post-partum haemorrhage and anuria, should be anticipated, and be promptly treated if they occur.

There is no place in treatment for artificial rupture of the membranes in the absence of contractions, plugging of the vagina, version, dilatation of the cervix, application of vulsellum to the scalp, and other radical procedures.

Artificial rupture of the membranes, even in the presence of contractions, is dangerous without preliminary treatment of shock.

Transverse lower-segment caesarean section has a small but definite place in treatment, the indication being the continued absence of contractions and progressive deterioration of the patient's condition after conservative measures have been given a fair trial.

I wish to thank Professor J. Chassar Moir for assistance in the preparation of this article, and Professor E. C. Crichton for advice in the treatment of the cases described.

BIBLIOGRAPHY

Baird, D. (1936). *Lancet*, **1**, 295.
Bartholomew, R. A. (1929). *Amer. J. Obstet Gynec.*, **18**, 818.
— (1947). Ibid., **53**, 650.
Batizfalvy, J. (1937). *Arch. Gynäk.*, **163**, 552.
Berkeley, C., Bonney, V., and MacLeod, D. (1938). *The Abnormal in Obstetrics*, p. 323. Arnold, London.
Bland, P. B., and Rakoff, A. E. (1938). *Amer. J. Obstet. Gynec.*, **36**, 165.
Brodhead, G. (1927). *N.Y. St. J. Med.*, **27**, 219.
Bull, G. M., Joekes, A. M., Lowe, K. G., and Evans, B. (1949). *Lancet*, **2**, 229.
Cosgrove, S. A. (1945). *Amer. J. Obstet. Gynec.*, **49**, 112.
— and Conway, D. F. (1941). *J. Mo. med. Ass.*, **38**, 334.
Crichton, E. C. (1947). *Trans. Int. Cong. Obstet. Gynaec.*, p. 114. Parkside Press, Dublin.
Davis, M. E., and McGee, W. B. (1931). *Surg. Gynec. Obstet.*, **53**, 768.
de Snoo, K. (1936). *Mschr. Geburtsh. Gynäk.*, **102**, 257.
Diekmann, W. J. (1936). *Amer. J. Obstet. Gynec.*, **31**, 734.
— and Kramer, S. (1942). *J. Amer. med. Ass.*, **120**, 590.
Duff, G. L., and Murray, E. G. D. (1941). *Amer. J. med. Sci.*, **201**, 428.
Faber, J. E. (1945). *Med. Clin. N. Amer.*, **29**, 848.
Falls, F. H. (1934). *J. Lancet*, **54**, 107.
FitzGibbon, G. (1926). *Proc. R. Soc. Med.*, **19** (Obstet. Sect.), 80.
Gibberd, G. F. (1933) Ibid., **26**, 1159.
— (1936). *J. Obstet. Gynaec. Brit. Emp.*, **43**, 60.
— (1948). *Canad. med. Ass. J.*, **58**, 53.
Goethals, T. R. (1928). *Amer. J. Obstet. Gynec.*, **15**, 627.
Greenhill, J. P. (1926). *Surg. Clin. N. Amer.*, **6**, 1107.
— (1938). *Year Book of Obstetrics and Gynecology*, p. 206. Year Book Publishers, Inc., Chicago.
— and DeLee, J. B. (1947). *Principles and Practice of Obstetrics*, 9th ed., p. 399. Saunders, Chicago.
Gustafson, G. W. (1945). *Amer. J. Obstet. Gynec.*, **49**, 103.
Harrar, J. (1932). *Bull. Lying-in Hosp., N.Y.*, **13**, 301.
Harris, J. W. (1937). *Wis. med. J.*, **36**, 101.
Irving, F. C. (1938). *Surg. Gynec. Obstet.*, **67** (Int. Abstr. Surg.), 56.
Kellogg, F. S. (1945). *Clinics*, **4**, 585.
Kilduffe, R. A., and DeBakey, M. (1942). *The Blood Bank and the Technique and Therapeutics of Transfusions*. St. Louis.
Kolff, W. J. (1947). *New Ways of Treating Uraemia*. Churchill, London.
Kraul, L. (1937). *Wien. med. Wschr.*, **77**, 509.
Ley, Gordon (1921). *J. Obstet. Gynaec. Brit. Emp.*, **28**, 69.
Mahon, R. (1938). *Bull. Soc. Obstét. Gynéc.*, **27**, 700.
Marriott, H. L. (1947). *British Medical Journal*, **1**, 245.
Miller, J. R. (1941). *Amer. J. Obstet. Gynec.*, **42**, 745.
Mitchell, R. (1938). *Canad. med. Ass. J.*, **39**, 378.
Murphy, D. P. (1942). *Amer. J. Obstet. Gynec.*, **44**, 694.
O'Regan, J. A. (1943). Ibid., **46**, 566.
Paramore, R. H. (1928). *J. Obstet. Gynaec. Brit. Emp.*, **35**, 292.
Phaneuf, L. E. (1925). *Boston med. surg. J.*, **192**, 1037.
— (1945). *Amer. J. Obstet. Gynec.*, **49**, 113.
Polak, J. O. (1931). Ibid., **21**, 218.
Scott, W. A. (1947). *Trans. Int. Cong. Obstet. Gynaec.*, p. 173. Parkside Press, Dublin.
Sheehan, H. L. (1942). *Lancet*, **1**, 616.
— (1947). *Trans. Int. Cong. Obstet. Gynaec.*, p. 151. Parkside Press, Dublin.
Stroink, J. A. (1934). *Ned. Tijdschr. Verlosk.*, **37**, 77.
Van Wyck, H. B. (1943). *Canad. med. Ass. J.*, **49**, 504.
Watkins, R. E. (1941). *Amer. J. Obstet. Gynec.*, **42**, 756.
Weymeersch, A., and Snoeck, J. (1937). *Gynéc. et Obstét.*, **36**, 156.
Williams, W. (1925). *J. Obstet. Gynaec. Brit. Emp.*, **32**, 259.
Young, J. (1949). *Proc. R. Soc. Med.*, **42**, 375.

POST-DYSENTERIC COLITIS*

BY

G. T. STEWART, B.Sc., M.D., D.T.M.&H.

For many years it has been known that a primary attack of dysentery may be followed by a chronic disorder of the colon. In amoebiasis this disorder is the rule rather than the exception, and it may take the form of periodic dysenteric attacks or simply of chronic diarrhoea. In a much smaller proportion of cases, acute bacillary infections may be followed by chronic dysentery. The diagnosis of one or other of these well-known conditions, however, always depends upon the recovery of the causal organism from the stools or from lesions in the colon, and it is usually inferred that the principal factor in the "colitis" is the persistence of that organism.

The present paper deals with a number of dysenteric and post-dysenteric cases seen by me at the close of the 1939–45 war. In a proportion of these cases disorder of the colon persisted long after the removal of the dysenteric organism This disorder, which may be termed post-dysenteric colitis (Hurst, 1943), seemed to be of two main types—ulcerative and non-ulcerative. The two types could be clearly differentiated for prognosis, treatment, and eligibility for pension.

The background to this report can be found in the numerous independent studies made during and after the 1939–45 war on the prevalence of dysentery in tropical campaigns, and in particular in papers by Adams (1945), Hargreaves (1946), and Stewart (1947a, 1947b, 1948). The present survey comprised 228 cases of dysentery and diarrhoea admitted to a hospital in Ceylon (Combined Services Hospital, Trincomalee) and 246 cases observed in the Tropical Diseases Centre, Smithdown Road Hospital, Liverpool. Details of the bacteriological and other technical methods employed in the investigation have already been described (Stewart, 1947a, 1948).

Cases Seen in Ceylon

The principal known causes of acute diarrhoea and dysentery in the Trincomalee area of Ceylon are shown in Table I. As might be expected, the majority of the cases

TABLE I.—*Dysenteric Disorders in Ceylon* (European and Asiatic Hospital Admissions)*

	Actual Numbers	% of Total
Amoebiasis	314	50
Bacillary dysentery	230	37
Flagellate dysentery	69	11
Salmonella infections	14	2

* Excluding helminthic infections, typhoid fever undiagnosed or symptomatic diarrhoea.

were accounted for by intestinal amoebiasis (50%) and bacillary dysentery (37%). For various reasons it was

*This investigation formed part of a research programme carried out at the Liverpool School of Tropical Medicine for the Colonial Medical Research Committee.

impossible to follow up many of these cases, and the analysis of relapses and recurrences of diarrhoea among cases of intestinal amoebiasis and bacillary dysentery was made from a smaller group (Table II).

TABLE II.—*Relapses and Recurrences of Diarrhoea in a Group of Cases of Amoebiasis and Bacillary Dysentery (Ceylon, 1945–6)*

Group	No. Treated	Recurrences After Treatment			
		Within 3 Weeks		Within 3 Months*	
		Organism	Diarrhoea (With or Without Organism)	Organism	Diarrhoea (With or Without Organism)
Bacillary dysentery (123)					
Sh. shigae	12	1 (1 death)	1	—	Four return cases, each with *E. histolytica*
Sh. shmitzi	6	—	—	—	
Sh. flexneri	30	—	—	—	
Sh. sonnei	26	16	6	6	
Others	10	—	—	—	
Diagnosed by exudate	39	—	1	—	
Intestinal amoebiasis (100)					
Dysentery	54	2	10	4	17
Chronic diarrhoea	46	—	8	2	12
Dual infection	5	—	—	2	2

* Including cases which relapsed after further courses of treatment.

In bacillary dysentery adequately treated with sulphonamides the relapse rate was negligible. *Shigella sonnei* displayed its well-known tendency to linger in the bowel beyond the period of treatment, but produced no further disease. Even in the absence of treatment, acute bacillary dysentery was noted to be self-limiting in a few cases admitted to hospital on the third or fourth day of illness. The findings therefore, in agreement with those of other investigators (Fairbrother, 1944; Scadding, 1945), suggest that chronic bacillary dysentery of the type described by Manson-Bahr (1943) and Rogers (1944) after the 1914–18 war must be extremely uncommon nowadays.

In contrast, there were many recurrences of symptoms among patients treated for active intestinal amoebiasis.* Not all of these recurrences were accounted for by persistence of *Entamoeba histolytica*, though it is obvious that such a statement is valid only when repeated attempts have been made to detect the parasite. In the present investigation it was assumed that stool examinations on 12 successive days, together with sigmoidoscopic scrapings and flotation technique, sufficed to identify the parasite in about 90% of cases (Faust *et al.*, 1939; Kershaw, 1946; Kershaw, O'Meara, and Stewart, 1948). With these criteria fulfilled it is evident from Table II that diarrhoea persisted in the absence of *E. histolytica* in 23 out of 29 relapses (79%). These cases probably represent the main source of post-dysenteric colitis.

*The standard treatment in this series was the Liverpool method (Adams, 1945). Each patient was treated for three weeks or more with emetine bismuth iodide, chiniofon ("quinoxyl"), and acetarsol ("stovarsol"). Injections of 1 gr. (65 mg.) of emetine hydrochloride (up to 12) were given to dysenteric or hepatic cases before the three-weeks course.

Cases Seen at the Tropical Diseases Centre, Smithdown Road Hospital, Liverpool

In the Liverpool area a number of cases of acute or chronic diarrhoea occurring in Service or Merchant Navy personnel returning from the Tropics were referred to the Tropical Diseases Centre, attached to the Liverpool School of Tropical Medicine. The admissions for 18 months in 1947–8 supported the evidence contained in the Ceylon data, in that the majority of the cases were accounted for by amoebiasis (Table III). The incidence of bacillary dysentery was negligible, and cases of chronic bacillary infection were again absent. The Liverpool hospital admissions, however, contained a group not definitely represented among the earlier cases seen in Ceylon: 49 cases, which we have labelled post-dysenteric colitis, in which diarrhoea persisted in the absence of any recognized intestinal pathogen.

TABLE III.—*Cases of Acute and Chronic Diarrhoea in Service Patients or Merchant Seamen Returning to England from the Tropics (Hospital Admissions to the Tropical Diseases Centre, Smithdown Road Hospital, Liverpool)*

	Actual Numbers	% of Total
Bacillary dysentery (acute, 2)	2	0·8
Intestinal amoebiasis (dysentery, 66; chronic diarrhoea, 108)	174	70·7
Other infections	21	8·5
Post-dysenteric colitis	49	20·0
Total	246	

TABLE IV.—*The Main Clinical Features of 49 Cases of Post-dysenteric Colitis*

History			
Bacillary dysentery	12	Previous diarrhoea	49
Amoebiasis	28	Intermittent diarrhoea	19
Both	9	Constipation	—
Symptoms			
Abdominal pain	26	Continuous diarrhoea	30
Dyspepsia	13		
Lassitude	25		
Loss of weight	23		
Good health	15		
Sigmoidoscopic Findings		**Faeces**	
Normal	18	Loose. No exudate	18
Granular areas	9	Loose. No exudate or scanty mucoid exudate	9
Ulcers	18	Blood and pus present	22
"Plush"	4		

The symptoms associated with post-dysenteric colitis are shown in Table IV. The condition defines itself in a patient with a proved history of dysentery, persistence of diarrhoea, and absence of the original infecting organism. As in most other forms of colitis, the main complaint was diarrhoea, which varied in severity and in frequency: in 62% it was continuous and in 38% intermittent. In 30% of the cases there was no complaint other than diarrhoea. The remainder gave histories or showed signs of lassitude, loss of weight, and abdominal pain, sometimes dyspeptic in character but more often "colicky."

Sigmoidoscopic and stool examinations showed that the cases could be divided into two main types (Table V). In

TABLE V.—*Provisional Classification of 49 Cases of Post-dysenteric Colitis*

No. of Cases	Condition of Colon	Region of Colon Most Affected	Other Findings	Type of Case (Provisional Classification)	
18	Normal or spastic. Mucosa normal. No exudate	—	General condition usually good. Neurotic tendency present	Neurosis	Type I: Functional post-dysenteric colitis
9	Wall normal or spastic. Granular areas on mucosa, formed of small pitted scars, pin-point depressions, and patchy hyperaemia. Mucoid exudate	Rectosigmoid junction	General condition good	"Irritable colon"	
18	Areas of ulceration. Intervening mucosa oedematous and congested. Severe diarrhoea with blood and pus in stools	Rectosigmoid junction	General condition variable. Occasionally leucocytosis and serum agglutinins for coliform organisms	(*a*) Added bacterial infection	Type II: Ulcerative post-dysenteric colitis
4	Entire mucosa intensely congested and oedematous. Superficial sloughing. Copious exudate of blood and mucopus	Entire area visualized by sigmoidoscopy	General condition poor. Anaemia	(*b*) Aetiology unknown	

one type (55%) the mucosa of the colon was normal in appearance, and the stools, though loose, contained no exudate or a scanty mucoid exudate. In these cases the diarrhoea was usually intermittent and seldom severe; in some cases a few loose or precipitate stools were passed in the morning only. In other cases neurotic or anxiety traits were noted, and these, together with the absence of organic change in the colon, suggested that the condition was to a large extent functional (see Case A). In most cases there was a slow natural improvement, without treatment. Four cases, rather more refractory, seemed to benefit from treatment with antispasmodics (hyoscine hydrobromide, 1/200 gr. (0.32 mg.) six-hourly) and phenobarbitone.

The second but more important type of case (45%) showed inflammatory or ulcerative changes in the colon, with blood and pus in the faeces (Table V). These cases were seriously and sometimes intractably ill. It is possible that they required further subdivision into two types, represented by Cases B and C, and defined by the aetiological and therapeutic factors detailed below.

Documentary records showed that each of these 49 cases had a previous history of dysentery and had experienced repeated attacks of diarrhoea before admission to hospital. The majority (57%) had suffered from amoebic dysentery, 24.5% from bacillary dysentery, and 18.5% from a dual infection. Acton (1933) and Silverman and Leslie (1945) have attributed the patency and severity of amoebic dysentery in tropical areas to concomitant infection with Shigella organisms. On the other hand, Stewart, O'Meara, and Kershaw (1948) have shown that the occurrence of the dysenteric state in amoebiasis is not necessarily dependent upon a coincident bacillary infection, and that mixed infections are not necessarily more severe or more prone to relapse than "unmixed" amoebic infections.

It is worth recalling that the exudate in a bacillary infection is alkaline, whereas that in amoebic dysentery is acid (Stewart, 1948), and it may be that the tissue reaction provoked by the activity of one organism is unfavourable for the simultaneous activity of the other. These findings, together with the absence of chronicity among the Shigella infections in the present series, suggest that the establishment of the post-dysenteric state does not depend upon a previous mixed infection or upon the persistence of a Shigella organism. A proportion (24.5%) of our cases, however, had histories of one or more attacks of bacillary dysentery, with no past or present evidence of amoebiasis, and it is possible that in such cases some additional factor may lead to the development of a colitis after the elimination of the specific Shigella organism.

The additional factor is one which may be present in cases of amoebiasis as well as in bacillary dysentery. In previous communications (Stewart, 1947b, 1948) I have shown that in severe and relapsing cases of amoebiasis there are changes in the relative distribution of the various organisms in the bacterial flora of the colon, and that there is a significant increase in the presence of paracolon organisms; this group of organisms has often been associated with outbreaks of diarrhoea and "non-specific enteritis," and it is possible that the persistence of diarrhoea in some post-dysenteric cases may be related to the presence of such potential pathogens in the intestine (Table VI).

At this stage the difference beween the two types of cases must be re-emphasized (see Table V). One type developed a mild intermittent diarrhoea with little or no inflammatory change in the colon and, at most, a scanty mucoid exudate in the faeces, while the second type developed an ulcerative colitis with severe and persistent diarrhoea and a purulent exudate. It is in the second or

TABLE VI.—*Ulcerative Post-dysenteric Colitis*

Case No.	History	Bacterial Flora of Faeces*	Serum Agglutination Titre	Treatment	Result
1	Bacillary dysentery	Enterococci	Not done	Penicillin (enemata) 10 × 10^6 units	Improved‡
2	Amoebiasis	*Bact. coli* Enterococci	Negative Not done	Chiniofon. Sulphasuxidine Penicillin 8 × 10^6 units i.m. and sulphathiazole 52 g.	No change
3	,,	*Bact. coli* Enterococci Paracolon	Negative Not done Negative	Penicillin (enemata) 10^6 units × 10	Improved
4	,,	*Bact. coli* Enterococci *Bact. morgani*	(O) 100 Not done Negative	Penicillin 8 × 10^6 i.m. Sulphasuxidine 60 g.	Slow improvement
5	,,	*Bact. coli* Enterococci Paracolon†	,, ,, (O) 100	Penicillin (enemata) 10 × 10^6	Improved
6	,,	*Bact. coli* Enterococci Paracolon†	Negative Not done (O) 50 (H) 200	Penicillin (enemata) Penicillin 8 × 10^6 i.m. and sulphathiazole 52 g.	No change Rapid improvement
7	,,	*Bact. coli* Paracolon	Negative ,,	Chiniofon—2½% retention enemata	Slow improvement
8	Bacillary dysentery Amoebiasis	*Bact. aerogenes* Paracolon	,, (O) 50	Chiniofon 2½% R.E. Penicillin R.E. 10 × 10^6	No change Improvement
9	Bacillary dysentery Amoebiasis	*Bact. coli* *Bact. aerogenes* Enterococci	Not done ,, ,, ,, ,,	Penicillin 8 × 10^6 i.m. and sulphathiazole 52 g.	Improvement
10	Bacillary dysentery Amoebiasis	*Bact. coli* Paracolon	Negative ,,	Penicillin R.E. 10 × 10^6	Improvement
11	Amoebiasis	*Bact. coli* Enterococci	(O) 50 (H) 200 Not done	Penicillin 8 × 10^6 i.m. and sulphathiazole 52 g. Sulphasuxidine 60 g.	Improvement
12	,,	*Bact. coli* *Bact. aerogenes* Paracolon Enterococci	(O) 50 Negative ,, Not done	Penicillin 8 × 10^6 i.m. and sulphathiazole 52 g. "Benadryl"	No change ,, ,,
13	,,	*Bact. coli* Paracolon	(H) 50 (H) 200	Chiniofon 2½% R.E.	Slow improvement

* Excluding Clostridia. † Eliminated after treatment. ‡ Improved = lessening of diarrhoea, diminution of exudate, healing of lesions (sigmoidoscopy).

"ulcerative" type (Table VI) that the element of added bacterial infection, non-specific in type and bearing some relation to the factor already described in cases of relapsing amoebiasis, might play a part. The number of cases in the present series, however, is too small for a statistical estimate of the significance of this factor, and it must also be recognized that changes in the intestinal flora *per se* do not necessarily constitute a pathogenic influence upon the colon (Stewart, 1948; Stewart, Jones, and Rogers, 1948).

In some cases it was possible to demonstrate serum agglutinins against coliform and paracolon organisms isolated from the faeces (Table VI). Blood cultures, taken before and after sigmoidoscopy, were negative in ten cases. Leucocyte counts varied from normal to 24,000 cells per c.mm. In other words, there was no definite evidence of a characteristic systemic response to the infection, just as there was no specific pathogen which could be incriminated. It would seem, nevertheless (Table VI), that some improvement might be expected in such cases from the use of penicillin and sulphonamides; the bacteria concerned, including coliform Gram-negative organisms, can be inhibited by high concentrations of these agents *in vitro* (Stewart, 1947c) and in experimental amoebiasis *in vivo* (Stewart and Jones, 1948), while penicillin has been shown to retain bacteriostatic potency in the colon (O'Connor, 1947). If penicillin and sulphonamides fail, some improvement may follow the use of a 2½% retention enema of chiniofon, which has antibacterial properties and produces a decrease in the number of coliform organisms in the faeces.

In the series described there were four cases showing pronounced inflammatory changes in the colon in which antibacterial treatment was of no avail, notwithstanding the use of large doses of soluble and insoluble sulphonamides, penicillin, and chiniofon. These cases were virtually intractable. One case showed unexplained remissions, but the others became gradually worse. The mucosa of the colon was evenly oedematous, congested, and fragile, like velvet plush in appearance. Large quantities of fresh blood were passed rectally. The patients grew weak, lost weight, and developed a hypochromic anaemia. No skin lesions, glossitis, or hypoproteinaemia were observed. Leucocyte counts were within normal limits. Skin tests and serum agglutination reactions with intestinal coliforms were negative, as were blood cultures. No definite benefit was seen after treatment with supplementary vitamins, high-protein diet, haematinics, and blood transfusion. On the hypothesis that the condition might be maintained by a sensitization mechanism, two cases were treated with antihistamine drugs, but without improvement.

It is obvious that such cases resembled the condition of idiopathic ulcerative colitis in their clinical course and intractability; the only difference was that they arose as direct sequelae to amoebic dysentery, the transition from one condition to the other being well exemplified by Case C.

In the cases here described the symptoms were pronounced enough to necessitate admission to hospital for investigation if not for treatment. It is probable that milder forms of post-dysenteric colitis are very common indeed among personnel returning from active service in certain areas of the Tropics. The majority of these cases may be expected to show the slow natural improvement of type I, but it is important that the more serious inflammatory conditions of type II should be recognized at the earliest possible stage.

Illustrative Cases

Case A: Post-dysenteric Colitis, Type I.—Bacillary and amoebic dysentery in India in 1941. Recurrent diarrhoea since then, treated in Army hospitals with courses of emetine and sulphaguanidine. On admission slightly underweight, but general condition good. Anxious disposition; 5–10 bowel movements a day; stools unformed, but no blood or mucus—12 specimens negative for *E. histolytica*, and 3 negative for bacterial pathogens. Sigmoidoscopy showed mucosa congested; granular areas at rectosigmoid junction; scraping gave epithelial cells only. *Treatment:*—Hyoscine hydrobromide (1/200 gr. (0.32 mg.) six-hourly) and phenobarbitone (½ gr. (32 mg.) t.d.s.) for six days. No change. Without treatment patient's condition began to improve three months later: 3 bowel movements a day; had gained weight and felt better.

Case B: Post-dysenteric Colitis, Type II (a).—Amoebic dysentery in Egypt in 1942, treated with emetine and chiniofon. Three subsequent relapses similarly treated. Intermittent diarrhoea 1945–6. In 1947 diarrhoea became severe and continuous. On admission he was pale and fatigued. Temperature 99–100° F. (37.2–37.8° C.). 5–6 bowel movements a day. Stools consisted largely of blood and pus; 12 stools negative for *E. histolytica*. Culture gave a predominance of Group B paracolon bacteria. Serum agglutinated this organism to 1:50 ("O") and 1:200 ("H"). Leucocyte count 16,540 (75% polynuclears). Sigmoidoscopy revealed congested mucosa in rectum and lower sigmoid colon, with extensive irregular ulcers most pronounced at rectosigmoid junction. Scraping: negative for *E. histolytica*. Biopsy of edge of ulcer: mucosa largely replaced by polynuclear cells and lymphocytes. *Treatment:*—Rest in bed; bland non-residue diet (high protein, high calorie); penicillin retention enemata daily for 10 days (1,000,000 units in 100–400 ml. saline). No improvement. Six-day course of penicillin (500,000 units four-hourly for four days and six-hourly for two days, intramuscularly) and sulphathiazole (76 g.). Diarrhoea stopped and exudate diminished one week later. Sigmoidoscopy showed congested mucosa with superficial healing of ulcers. Paracolon bacteria disappeared from stools following treatment. After one month's leave the patient returned symptom-free. Sigmoidoscopy now showed complete healing of lesions. No relapse during succeeding year.

Case C: Post-dysenteric Colitis, Type II (b).—Amoebic dysentery in India in 1943. Several relapses, all treated with emetine, chiniofon, and sulphonamides. Admitted to hospital with amoebic dysentery relapse in 1947. Treated with emetine (5 gr.—0.32 g.), "auremetine" (30 gr.—1.95 g.), acetarsol (120 gr.—7.8 mg.), and chiniofon retention enemata (10 days). Diarrhoea persisted after treatment, and a week later *E. histolytica* trophozoites reappeared in stools. Sigmoidoscopy revealed oedematous friable mucosa from anal margin upwards; extensive irregular ulcers. *Treatment:*— Sulphasuxidine (60 g.) and chiniofon retention enemata (10 days). *E. histolytica* disappeared, but stools became frankly purulent. Further treatment with sulphathiazole, penicillin, supplementary vitamins, etc., brought no improvement, but a spontaneous remission occurred after three months. This was maintained for six months, and then a mild relapse occurred. Faeces were consistently negative for *E. histolytica* and bacterial pathogens. A leucocyte count was within normal limits. There were no serum agglutinins for intestinal coliforms.

Summary

Amoebic dysentery or, less commonly, bacillary dysentery may be followed by chronic colitis, supervening after the clearance of the original infecting organism.

Thus defined, the condition of post-dysenteric colitis occurs in three forms, differing in prognosis and management, and possibly in aetiology:

Type I.—Non-ulcerative; large functional element; slow natural improvement.

Type IIa.—Ulcerative; element of non-specific added bacterial infection; therapeutic response to antibacterial treatment.

Type IIb.—Ulcerative; no response to antibacterial treatment; possibly akin to idiopathic ulcerative colitis.

Grateful acknowledgment is made to Professor B. G. Maegraith, in whose department much of the work was done; Dr. A. R. D.

Adams for access to a number of patients; Dr. J. Steel and Dr. J. C. Brundrett for facilities granted at Smithdown Road Hospital, Liverpool; the Medical Research Council for an expenses grant; and to the Medical Director-General of the Royal Navy for permission to publish data obtained at the Combined Services Hospital, Trincomalee, Ceylon.

REFERENCES

Acton, H. W. (1933). *Trans. R. Soc. trop. Med. Hyg.*, **27**, 119.
Adams, A. R. D. (1945). Ibid., **38**, 237.
Fairbrother, R. W. (1944). *British Medical Journal*, **2**, 489.
Faust, E. C., *et al.* (1939). *J. Parasitol.*, **25**, 241.
Hargreaves, W. H. (1946). *Quart. J. Med.*, n.s. **15**, 1.
Hurst, A. F. (1943). *Medical Diseases of the War*. Arnold, London.
Kershaw, W. E. (1946). *British Medical Journal*, **1**, 305.
—— O'Meara, P. J., and Stewart, G. T. (1948). *Trans. R. Soc. trop. Med. Hyg.*, **41**, 441.
Manson-Bahr, P. H. (1943). *Dysenteric Disorders*. Cassell, London.
O'Connor, R. J. (1947). *Trans. R. Soc. trop. Med. Hyg.*, **41**, 78.
Rogers, L. (1944). In Rogers and Megaw's *Tropical Medicine*. Churchill, London.
Scadding, J. G. (1945). *Lancet*, **2**, 549.
Silverman, D. N., and Leslie, A. (1945). *J. Amer. med. Ass.*, **129**, 187.
Stewart, G. T. (1947a). *J. R. nav. med. Serv.*, **33**, 6.
—— (1947b). *Trans. R. Soc. trop. Med. Hyg.*, **41**, 75.
—— (1947c). *J. Hyg., Camb.*, **45**, 282.
—— (1948). *Ann. trop. Med. Parasitol.*, **42**, 198.
—— and Jones, W. R. (1948). Ibid., **42**, 33.
—— —— and Rogers, M. A. T. (1948). *Nature, Lond.*, **161**, 936.
—— O'Meara, P. J., and Kershaw, W. E. (1948) *J. R. nav. med. Serv.*, **34**, 2.

PROGNOSIS IN BRONCHIAL ASTHMA

BY

DERMOT McCRACKEN, M.B., M.R.C.P.
Assistant Physician, Ashton-under-Lyne County Hospital

Asthma was recognized before the time of the earliest medical literature, although it was only during the sixteenth century that bronchial asthma began to emerge as a distinct entity. Until this time other types of dyspnoea were confused with bronchial asthma, and indeed it took several centuries for the difference to be generally realized. Asthma was mentioned in the Ebers Papyrus, written 1,500 years B.C. (and so must have been known centuries before this), and in the writings of Homer and Herodotus. Hippocrates and Galen mention it, and Aretaeus of Cappadocia, a contemporary of Galen, gave the first fairly accurate description of an attack of asthma.

Until recent times few of the writers on asthma have made much mention of the prognosis. Henry Hyde Salter devoted the whole of Chapter 15 in his book on asthma, published in 1868, to the prognosis. This, he said, depends on the duration of attacks (rather than their severity), their frequency, the completeness of recovery between them, their apparent tendency (that is, whether they appear to be getting more frequent and more severe, or less frequent and lighter), the length of time asthma has existed, the patient's age, and the presence or absence of organic mischief in heart and lungs. He thought that the prognosis in a patient under 15 years of age is almost invariably good, that there is no disease in which age is more important in the prognosis, and that the chances of recovery are in inverse proportion to the length of time the disease has existed.

After reading about asthma in the literature of all periods, what perhaps impresses one most is how some of the earlier physicians, by painstaking and detailed observation of patients, arrived at conclusions which we are to-day verifying and, indeed, in many cases rediscovering.

Present Investigation

An attempt has been made to analyse and assess the factors which govern the prognosis in bronchial asthma. For this purpose patients who had been under observation for bronchial asthma for ten years or more were chosen—patients who made their first visit to the Cardiff Municipal Asthma Clinic in 1935 and 1936. This clinic is run in conjunction with the municipal hospital, to which doctors can refer any case of bronchial asthma or hay-fever living within the city boundaries. Approximately 200 to 400 new cases are seen each year. A team of doctors investigate the patients, treatment is instituted, and the patients are carefully followed up. The first 80 patients to attend in 1935 and 1936 who could be traced and persuaded to attend for interview were seen personally between April, 1946, and April, 1947, when a detailed history was taken. Of the patients not included in the series the majority could not be traced, and most of the remainder had moved to distances precluding personal interview. In the case of patients who died, the relatives and the doctor attending the last illness were contacted. The cases were thus not selected in any way, and only those which appeared to be definite bronchial asthma were included in the series. A large number of patients whose asthma began in early life brought their parents with them to the interview, and the others had usually filled in any gaps in their own knowledge from their parents before coming.

To be accepted as a case of bronchial asthma a patient had to give a history of dyspnoea which occurred in or was much worse in paroxysms and was associated with a tight feeling in the chest. Patients who had had chronic bronchitis as babies and young children, and in whom paroxysmal dyspnoea developed later, were accepted, as were those in whom, following a typical earlier history, dyspnoea had become chronic, with merely fluctuations in its intensity. The asthma clinic records and any in-patient notes of the cases were consulted. The data obtained in this way were then analysed and an attempt made to assess the factors governing the prognosis in bronchial asthma.

In assessing the end-results the patients were placed in one of four categories—namely, cured, improved, unimproved, and dead. The total number of cases investigated was 80, and the results were: cured, 17 (21%) cases; improved, 43 (54%); unimproved, 12 (15%); dead, 8 (10%). It is of course difficult to speak of cure in asthma, as the patient may possibly develop symptoms again at some later period. The longer he is free, however, the less likely this is to occur, and the more justified we are in using the term "cure." The criterion used in this investigation for placing the patient in the "cured" group is that no asthmatic symptoms whatever have been experienced for at least four to five years. Despite the stringent criteria for cure in the present series 21% have been "cured" for four to eleven years, and over 70% of this group for periods exceeding seven years (see Table I).

TABLE I.—*Period of Freedom From Asthma in 17 Cured Cases*

4–5 years	1 case	8–9 years	3 cases
5–6 „	1 „	9–10 „	3 „
6–7 „	3 cases	10–11 „	2 „
7–8 „	4 „		

Cases in which a mild attack was experienced at intervals of years or in which occasional tightness of the chest was the only remaining manifestation—that is, cases in which "cure" seemed to have been almost but not quite achieved—were placed in the "improved" group, as were all cases showing any improvement occurring before and maintained up to the time of personal interview. Cases in which there was no improvement and those in which the condition was definitely worse were included in the unimproved group. The last group, of course, contains

patients whose death was directly attributable to asthma and those in whom asthma bore no relation to the cause of death. An attempt has here been made to analyse and assess the factors which govern the prognosis.

Influence of Age at Onset

The age of the patient at the time of onset of the asthma seemed to play a part in the ultimate prognosis, as may be seen from Table II. From this it would seem

TABLE II.—*Influence of Age at Onset upon Results*

Age at Onset	Cured	Improved	Unimproved	Dead	Total
0–2 years ..	8 (29%)	16 (58%)	2 (7%)	2 (7%)	28
3–9 ,, ..	6 (26%)	11 (48%)	5 (22%)	1 (4%)	23
10–19 ,, ..	1 (11%)	6 (66%)	1 (11%)	1 (11%)	9
20–29 ,, ..	1 (9%)	5 (45%)	3 (27%)	2 (18%)	11
30+ ,, ..	1 (11%)	5 (55%)	1 (11%)	2 (22%)	9

that the prognosis in the first two groups may be better than in the succeeding ones, but that the prognosis in the 0–2 group is not a great deal better than in the 3–9 group. The figures suggest that the prognosis may be improved in those cases in which asthma develops in the first decade. But it matters less whether it develops in the early or late part of the decade.

The ages of the 17 cured patients at the time of onset of their asthma was 0–9 years in 14 cases, 10–19 years in 1 case, 20–29 years in 1 case, 30 years and over in 1 case. Thus 82% of the cured cases developed asthma in their first decade (yet only 64% of cases in the series were in the 0–9 age at onset group).

Influence of Duration of Asthma before Attendance at the Clinic

Many diseases are easier to treat in their earlier stages, and this might be expected to be particularly true in bronchial asthma, both because many people believe that there is a superimposed psychological factor in asthmatic attacks in many cases and because any disease affecting the respiratory tract is apt to produce permanent changes if long sustained. For this reason a note was made of the time elapsing between the onset of the patient's asthma and his attendance at the clinic, and also of the end-results, to see if the two were correlated.

TABLE III.—*Influence of Duration of Asthma Before Attendance at Clinic on Results Obtained in 49 Cases whose Asthma began at Ages 0–9*

Duration Before Attendance	Cured	Improved	Unimproved	Dead	Total
0–2 years ..	2 (40%)	3 (60%)	0	0	5
2–5 ,, ..	7 (58%)	4 (33%)	0	1 (9%)	12
5–10 ,, ..	3 (18%)	11 (64%)	2 (12%)	1 (6%)	17
10+ ,, ..	2 (13%)	9 (60%)	3 (20%)	1 (7%)	15

Table III shows these results in the 49 cases whose asthma began at ages 0–9 (inclusive) and who therefore have a uniformly good prognosis from the point of view of age of onset. With the exception of one of these patients who had received autogenous blood, and one who had been dieted by a herbalist, these 49 cases had received only symptomatic treatment from the family doctor before attendance at the clinic.

Table III suggests that early treatment is valuable in these cases. The prognosis in those cases seen within five years of onset may be better than that in those seen after a longer delay.

Influence of Sex

Table IV shows the number of males and females developing asthma at different ages. This is shown graphically in the accompanying Chart.

TABLE IV.—*Age at Onset According to Sex*

	Age at Onset (Years)			
	0–9	10–19	20 and Over	Total
Males ..	30	4	10	44
Females ..	21	5	10	36

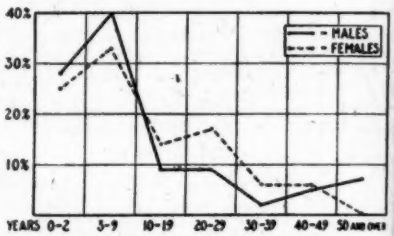


Chart showing percentage of cases falling into each age group (males and females).

As the prognosis is possibly better in those cases beginning in the first decade, and as males develop asthma at an earlier age than females, we should expect the prognosis to be better in males. The figures suggest that this is the case (see Table V). The difference in results in the two sexes may not, however, be entirely due to the difference in the age at onset. Table VI shows the influence of sex upon the results in cases in which asthma began at age 0–9. The prognosis in males is still better than in females even when groups with a similar age of onset are compared.

TABLE V.—*Influence of Sex upon Results*

	Cured	Improved	Unimproved	Dead	Total
Males ..	10 (23%)	26 (59%)	4 (9%)	4 (9%)	44
Females ..	7 (19%)	17 (47%)	8 (22%)	4 (11%)	36

TABLE VI.—*Influence of Sex Upon Results in Cases in which Asthma Began at Ages 0–9*

	Cured	Improved	Unimproved	Dead	Total
Males ..	9 (30%)	18 (60%)	3 (10%)	—	30
Females ..	5 (24%)	9 (43%)	4 (19%)	3 (14%)	21

Chronic Respiratory Symptoms

Certain sufferers from bronchial asthma develop chronic respiratory symptoms which are persistently present in between their attacks of asthma. In this investigation patients who suffered from cough or sputum or shortness of breath between their attacks were considered to be suffering from chronic respiratory symptoms, while those who were quite free from such symptoms except during the actual asthmatical attacks were considered not to be suffering from chronic respiratory symptoms (their incidence in short-term infections was ignored): 16 (22%) suffered from chronic respiratory symptoms and 58 (78%) did not.

In an effort to ascertain the factors responsible for cases developing chronic respiratory symptoms a table was worked out to show the age of onset of those developing them and the age of onset of those not developing them (Table VII). Thus of those cases developing chronic

TABLE VII

Age at Onset	Cases with Chronic Respiratory Symptoms	Cases without Chronic Respiratory Symptoms
0–9 years	8 (50%)	36 (62%)
10–19 ,, ...	3 (17%)	9 (16%)
20–29 ,, ...	2 (12%)	9 (16%)
30 and over	3 (17%)	4 (7%)

respiratory symptoms a smaller percentage fall into the youngest age group than into the older groups.

Of those patients who came for treatment relatively late after the onset of symptoms a greater percentage develop chronic respiratory symptoms (Table VIII). Patients

TABLE VIII.—*Influence of "Duration of Asthma Before Attendance at Clinic" on Incidence of Chronic Respiratory Symptoms*

Duration of Asthma Before Attendance at Clinic	Cases with Chronic Respiratory Symptoms	Cases without Chronic Respiratory Symptoms
0–2 years	2 (13%)	12 (21%)
2–5 ,, ...	4 (25%)	20 (34%)
5–10 ,, ...	5 (31%)	12 (21%)
10+ ,, ...	5 (31%)	14 (24%)

should therefore be encouraged to report for advice and treatment as soon as possible after developing symptoms of bronchial asthma for two reasons : the chance of cure is greater if they do so, and the incidence of chronic respiratory symptoms is less among such patients.

Types of Allergen

Over 50% of cases were found to be sensitive to multiple allergens, and the prognosis in these cases was very much poorer than in those in which only one allergen could be found (Table IX). On the other hand, those sensitive

TABLE IX

Allergen	Cured	Improved	Unimproved	Dead	Total
Multiple ..	7%	56%	20%	17%	41
House-dust and feathers	33%	66%	0	0	12
Not known..	37%	53%	11%	0	19
Whole series	21%	54%	15%	10%	72

to house-dust and feathers have a better prognosis. The members of this group are fortunate in that they can undergo a course of desensitization and avoid feathers. Other workers have noted particularly good results in asthma due to pollen, and it seems that considerable help can be given to patients whose asthma is due to inhalants.

Other Allergic Conditions

An attempt was made in all cases to find out from the patients or their relatives whether there was a personal and/or family history of allergic manifestations other than asthma. The conditions regarded as being allergic manifestations for the purpose of this investigation were : migraine, urticaria, hay-fever, vasomotor rhinitis, gastro-intestinal allergic manifestations, and infantile eczema. It was found that 57 cases (72%) gave a personal history of one or more of these conditions, while 22 cases (28%) did not. Of the 57 patients who gave a personal history of such conditions 23 suffered from one other manifestation, 24 from two other manifestations, 5 from three, 2 from four, 2 from five, and 1 from six. Thus 47 out of these 57 suffered, in addition to asthma, from two other diseases which were probably allergic in origin.

Table X shows how the prognosis is affected when patients have a personal history of one or more of these other conditions. The prognosis appears to be very much better in those cases in which asthma is the only allergic

TABLE X

	Cured	Improved	Unimproved	Dead	Total
Personal history ..	18%	54%	19%	9%	57
No personal history ..	32%	55%	5%	9%	22

manifestation. The relation of a personal history of other allergic conditions to the age at onset was investigated. It was found to have had no effect in the present series, and the prognosis is therefore affected in some other way.

Family History

In the 78 cases in which the family history could be clearly ascertained it was found that 42 had no history of asthma on either side, 33 gave a history of asthma on one side or the other (16 paternal, 17 maternal), and 3 a history of asthma on both sides. It therefore seems that there is no sex difference in the transmission of asthma.

The effect of allergic manifestations, including asthma, upon the prognosis would be greater than the effect of asthma alone. Investigation was made into the effect upon the prognosis of a family history in any generation (including siblings) of asthma or any of the six allergic manifestations listed ; in this series no effect was shown. It was also found that a family history of allergy had no bearing upon the age at onset. It was found that 59 cases (77%) have a positive history and only 18 (23%) a negative one. It would be interesting to know how many of the 23% have a family history of allergic manifestations unknown to them. It is reasonable to assume that some have such a history, and if the number should prove to be considerable it would mean that most families have some members with allergic manifestations.

Skin Reactions.—The presence or absence of positive reactions was not found to affect the prognosis.

Size of Family and Age of Parents

Table XI shows the effect upon the patient's prognosis of the number of brothers and sisters. In the fatal cases the size of family was not ascertained. With the exception

TABLE XI.—*Effect of Size of Family upon Prognosis in 70 Cases*

No. of Children in Family	Cured	Improved	Unimproved	Dead	Total
1	17%	83%	—	—	6
2	36%	57%	7%	—	14
3	18%	69%	13%	—	16
4 or more ..	21%	56%	24%	—	34

of the figure 17% in the "cured" column for "only" children the prognosis appears better the smaller the family. This particular figure can perhaps be explained by the fact that parents of "only" children tend to be over-anxious about them, this atmosphere being felt by the child and leading to an environment unfavourable for cure.

TABLE XII.—*Age of Parents in 68 Cases*

Average Age of Parents	Cured	Improved	Unimproved	Dead	Total
Up to and including 25	16%	74%	10%	—	19
26–30 ..	26%	52%	22%	—	23
31–35 ..	24%	53%	24%	—	17
35+ ..	33%	67%	—	—	9

Table XII shows the effect of the average age of the parents at the time of the patient's birth. It seems that on the whole the prognosis is better where the parents are older, but this result may be fortuitous. On the other hand, the social and economic status tends to be better in the older parental group, and the results here might also be correlated with the results of Table XI—that the results are poorer, or at least the percentage of cases not improved is greater, in the bigger families.

Effects of Menstruation and Pregnancy

The effect of menstruation upon asthma in 30 female patients was : no effect in 20 cases (66.6%) and worse in 10 cases (33.3%). The effect of pregnancy in 9 patients was : better in 5 (56%), no effect in 2 (22%), and worse in 2 (22%). Of the five who were better during pregnancy, three were among those whose asthma was not affected by menstruation and two among those whose asthma was worse during their periods.

The results in the 10 cases that were worse during menstruation are exceedingly poor compared with the series as a whole. They were : cured, 10% ; improved, 40% ; and unimproved, 50%.

Operations upon the Upper Respiratory Tract

Twenty-two patients underwent operations upon polypi, sinuses, tonsils, adenoids, and/or nasal septa subsequent to the development of asthma, and remembered the results of such operations upon their asthma. There was no effect in 16, one case experienced temporary improvement, and five cases were permanently improved. All the six patients who improved had had operations upon polypi, sinuses, and/or septa, and none upon tonsils and adenoids. It also seems worthy of comment that in most of the relieved cases the relief was permanent.

Death in Bronchial Asthma

In the series of 80 cases there were eight deaths—in four asthma was the main or sole cause of death, but in four it bore no relation to death. The data concerning the four cases whose death was directly due to asthma are given in Table XIII.

TABLE XIII.—*Data Concerning Cases in which Death was Directly and Solely Due to Asthma*

	Case 1	Case 2	Case 3	Case 4
Sex	Male	Female	Male	Female
Age at death	47 years	13½ years	50 years	17 years
Age at onset	29 ,,	2½ ,,	19 ,,	7 ,,
Time between onset and death	18 ,,	11 ,,	33 ,,	10 ,,
Skin tests	Negative	Positive	Positive	Positive
Family history of asthma	Yes	Yes	Yes	No
Family history of allergic manifestations	Yes	Yes	Yes	Yes
Personal history of other allergic manifestations	Yes	Yes	Not known	Yes
Time between onset and treatment at clinic	13 years	8 years	28 years	2 years
Allergen	Multiple	Multiple	Multiple	Multiple

It will be noted from the table that there were present a personal history of other allergic manifestations in the three cases in which this part of the history could be ascertained, a family history of allergic manifestations in all four cases, and a family history of asthma in three. Three of the four cases had experienced asthma for many years before seeking treatment. Three of the four cases gave positive skin reactions, and all four were sensitive to multiple allergens.

Conclusion

If the findings in this investigation are confirmed by others it means that we have enough data in our possession to enable us, in a large number of cases, to give some idea of the prognosis, and in some cases to forecast it with accuracy. It is realized that a larger series of cases would have borne more weight, but the amount of clerical work involved and the absence of clerical assistance, together with the difficulty in contacting cases after such a long period of time, precluded this. However, it is hoped that the results are suggestive enough to stimulate further investigations along lines not previously explored, as so far there seem to be no figures available for comparison with many of those given here.

I am indebted to Dr. D. G. Morgan for access to the cases and records of the Cardiff Municipal Asthma Clinic, and to Professor A. M. Kennedy, director of the Medical Unit of the Welsh National School of Medicine, and Dr. D. A. Williams, physician in charge of the asthma clinic, for much helpful advice and criticism.

LOW SPINAL ANALGESIA IN OPERATIVE OBSTETRICS

A FURTHER SERIES OF 511 CASES

BY

E. E. RAWLINGS, M.D., M.R.C.O.G.

Obstetrician and Gynaecologist, Hope Hospital, Salford

Spinal analgesia has been a method of choice in the obstetrical and gynaecological departments of Hope Hospital for the past six years. During this time it has been used for 1,130 major gynaecological operations, 287 caesarean sections, and 767 operative vaginal deliveries, making a total of 2,184 cases, and has proved eminently satisfactory.

It is not my intention to add fuel to the already burning question of spinal analgesia for caesarean section. This topic has been fully dealt with by Thomas (1942, 1944), Resnick (1945), and others. Most of the arguments used against it can easily be refuted by the wealth of evidence in its favour. However, these arguments have even less bearing on the question of low spinal analgesia in operative vaginal deliveries. Resnick published a full analysis of 394 cases of heavy cinchocaine hydrochloride ("nupercaine") analgesia in operative obstetrics—138 caesarean sections and 256 operative vaginal deliveries. These were performed at Hope Hospital over a two-year period ending August, 1945.

This paper reviews a further series of operative vaginal deliveries under spinal analgesia and assesses the safety and suitability of this analgesic in obstetric practice. The 511 cases analysed below are in addition to the 256 cases presented by Resnick, and were performed during the period August, 1945, to May, 1949.

Technique

Ephedrine, 1 gr. (65 mg.), was given intramuscularly half an hour before the operation when time permitted. In recent years this has been dispensed with in the majority of cases without any adverse effect. The preparation used throughout has been heavy cinchocaine ("nupercaine 1 in 200 in 6% glucose). Low forceps deliveries have been done with as little as 0.5 ml. (2.5 mg.), but on an average 0.7 ml. (3.5 mg.) has been administered. The technique followed is that used by Resnick (1945), with the following modifications. Barbotage was not employed, and the needle was inserted between the third and fourth lumbar vertebrae with the patient in the sitting position. A fine needle, 20–22 S.W.G. (0.9–0.7 mm.), short bevel, rustless steel, was used.

Analysis of the Cases

Spinal analgesia was employed for all deliveries except in cases of severe haemorrhage, internal version, and eclampsia. In connexion with the latter, Anderson (1946) and Cosgrove (1927) consider spinal analgesia to be eminently satisfactory. I have no experience of its use in this condition. In patients with heart disease, if a mid-forceps delivery was indicated, spinal analgesia was used in preference to a pudendal block.

When analysing indications for operative vaginal delivery the difficulty of classification arises. There are often two or three indications for delivery—for example, forceps may be applied for both foetal and maternal distress associated with delay in the second stage of labour, due perhaps to a deep transverse arrest. In Table I only the main indication for intervention is shown—for example, delay in the second stage of labour was the main indication for intervention in 295 cases. It was also a secondary indication in 40 cases; these latter have been included under the headings of "Foetal Distress," "Maternal Distress," etc.—whichever was the main reason for operative delivery.

TABLE I.—*Indications for Operative Vaginal Delivery in 511 Cases*

Indications	Booked Cases			Emergency Cases			Total
	L.F.	M.F.	H.F.	L.F.	M.F.	H.F.	
Delay in second stage:							
Anterior position ..	82	6	1	3	2	—	94
Deep transverse arrest ..	25	44	—	6	5	—	80
Persistent occ. posterior ..	24	28	1	5	7	1	66
Narrow outlet	20	5	—	2	2	—	29
Inertia	11	2	—	2	1	—	16
Rigid perineum	4	—	—	1	—	—	5
Hydrocephalic	1	—	—	1	—	—	2
Brow to vertex	—	—	—	—	2	—	2
Hand alongside head ..	1	—	—	—	—	—	1
Total	168	85	2	20	19	1	295
Foetal distress	77	19	—	6	17	—	119
Maternal distress:							
Alone	6	6	2	2	2	1	19
Associated with							
Pre-eclampsia	4	2	—	3	2	—	11
Heart disease	6	2	—	1	—	—	9
Essential hypertension	4	1	—	—	—	—	5
Phthisis	3	—	—	—	—	—	3
Diabetes	2	—	—	—	—	—	2
Total	25	11	2	6	4	1	49

	Booked Cases	Emergency Cases	
Miscellaneous:			
Poor co-operation ..	6	3	9
Big baby	4	1	5
Breech extraction ..	3	1	4
Prolapsed cord	2	—	2
"Rigid cervix" incision and forceps	2	—	2
Prolapsed arm	—	1	1
Previous C.S.	1 (low forceps)	—	1
"Failed forceps" ..	—	8 (6 forceps deliveries; 2 craniotomies)	8
Craniotomy	—	1	1
Twins	11 (forceps)	4 (3 forceps; 1 breech extraction)	15
Total	29	19	48

L.F. = Low forceps deliveries. M.F. = Mid-forceps deliveries. H.F. = High forceps deliveries.

In all, 511 operative vaginal deliveries were carried out on 507 mothers under heavy cinchocaine analgesia. There were 11 cases of twins: seven of these mothers had a forceps delivery of either the first or the second twin; three had forceps deliveries of both babies; and the remaining one had a forceps extraction of the first twin and a breech extraction of the second. Two cases of severe perineal lacerations were sutured under spinal analgesia; these have not been included in the series.

When breech extraction is necessary it is usually performed under general anaesthesia, but it was successfully carried out on five occasions in the series under spinal block—four times with a single foetus and once on a second twin.

Manual removal of the placenta was performed on 12 occasions after an operative delivery under spinal analgesia. In seven of these cases a general anaesthetic was given, as the manual removal was performed two to six hours after delivery. These cases have not been included. However, on the last five occasions the placenta was removed manually before the effect of the spinal analgesic had worn off and without any supplementary anaesthesia. This manœuvre has been carried out up to two hours after the analgesic had been given. The analgesia has been adequate for this purpose, and no difficulties have been encountered.

Andros *et al.* (1948), using a dosage of 0.5 ml. (2.5 mg.) of 1 in 200 cinchocaine administered late in the first stage of labour, observed the mean duration of complete analgesia from uterine contraction pain to be two hours eighteen minutes. Perineal anaesthesia lasted more than four hours in 42% of the cases.

In only one case did the spinal fail to take: supplementary anaesthesia was required to effect delivery. This case has not been included. There were eight cases of "failed forceps"—patients who had had general anaesthetics before admission and required operative vaginal delivery. Craniotomy was performed on two of these, and the remaining six were delivered by forceps—all under spinal block.

Maternal Mortality

In the present series there were two maternal deaths.

Case 1.—Mrs. A., a primigravida aged 29, was admitted as an emergency at the 36th week of pregnancy, in premature labour. She was suffering from congestive heart failure due to advanced mitral stenosis and aortic regurgitation. A low forceps extraction of a living female child weighing 5 lb. 5 oz. (2.41 kg.) was performed early in the second stage of labour. The patient's condition did not improve, and she died of cardiac failure 58 hours after delivery.

Case 2.—Mrs. B., a primigravida aged 34, was a booked case. The pregnancy progressed normally to term. As there was delay in the second stage of labour owing to a deep transverse arrest, manual rotation and forceps extraction of a living male child weighing 5 lb. 9 oz. (2.52 kg.) were performed. The puerperium was normal until the third day, when the patient collapsed, dying soon afterwards. Post-mortem examination revealed a cerebral haemorrhage. The source was not discovered, but was presumed to be the rupture of a small aneurysm.

In neither of these cases could the death be attributed to the anaesthetic.

Foetal Mortality

Altogether 35 (6.8%) infants were lost. If we exclude four cases of intrauterine death which occurred before the spinal analgesic was administered, three cases in which craniotomy was performed, and three infants born with abnormalities incompatible with life, the corrected infant loss is 25 (5%). This includes premature infants, cases of prolapsed cord, difficult vaginal deliveries, etc. It is only fair to point out that malpresentations requiring internal version (a manœuvre with a very high foetal mortality) were dealt with under general anaesthesia.

In no case has the analgesic appeared to have a detrimental effect on the foetus. On the contrary I have been impressed by the benefits to the foetus of this method. When the factors necessitating operative intervention are taken into consideration one cannot fail to be impressed by the satisfactory condition of the foetus at birth. The great majority of the infants took their first breath as soon as the head was delivered. Andros *et al.* (1948) noted that 95% of the infants breathed spontaneously in less than one minute after delivery, and remarked that this is a much higher rate than with other methods of anaesthesia in their department. Hugill and Gillespie (1948) state that only 5% of babies required resuscitation after a "spinal"

delivery, compared with 26% after a delivery under general anaesthesia.

Post-operative Complications

Headache was the only early complication noted; 19 (3.8%) women complained of a moderate or severe degree of headache. In Table II the incidence of headache after spontaneous deliveries is compared with that following deliveries under spinal analgesia.

TABLE II.—*Incidence of Headache*

	Mild	Moderate	Severe
Deliveries under spinal analgesia	10·5%	2·2%	1·6%
Spontaneous deliveries	9·7%	1%	0·3%

There were no sequelae affecting the chest. No remote complications of spinal analgesia were brought to our notice, although a large percentage of the patients attend the post-natal clinics and many have been seen during a subsequent pregnancy.

Over the same period 150 caesarean sections have been carried out under heavy cinchocaine analgesia, with no maternal mortality. In the six-year period 1943–9—i.e., including Resnick's series—there have been 287 consecutive caesarean sections under spinal analgesia without a maternal death.

It is important to stress the fact that the safety of the method depends on using the minimal dosage required to produce adequate analgesia, and that for a vaginal delivery it is rarely necessary to use more than 0.8 ml. of heavy cinchocaine. In these quantities the method is very safe.

Discussion

None of the theoretical evils of spinal analgesia has been encountered. The advantages of this form of analgesia to the mother, the baby, and the obstetrician have been adequately summarized by Thomas, Resnick, Anderson, and others. Their conclusions have been confirmed in this series. One cannot fail to be impressed by the well-being of the mother and the absence of shock after a difficult vaginal delivery under spinal block.

I was brought up in the "anti-spinal school" and was thus well primed in all the weighty arguments which are levelled against its use in obstetric practice. I then found myself in the dilemma of working in a department where spinal analgesia was an established practice and where the results had been extremely satisfactory. It was not without qualms that the decision was made to follow the established tradition rather than upset a machine which was running smoothly.

Summary

A series of 511 operative vaginal deliveries under heavy cinchocaine spinal analgesia is presented and analysed. The technique is simple and safe in the dosage employed. The analgesia has been excellent and no ill-effects to the child have been noted. The only factor unfavourable to the mother was headache.

My thanks are due to Mr. George Brown, medical superintendent of this hospital, for permission to publish the results of these cases. I am especially grateful to my predecessors, and to the resident obstetrical officers (Drs. Donovan and Ridehalgh) who have performed a large percentage of the operative deliveries, and to the midwifery staff for their excellent co-operation and high standard of nursing care.

REFERENCES

Anderson, A. F. (1946). *J. Obstet. Gynaec. Brit. Emp.*, **53**, 347.
Andros, G. J., Dieckmann, W. J., Ouda, P., Priddle, H. D., Smitter, R. C., and Bryan, W. M. (1948). *Amer. J. Obstet. Gynec.*, **55**, 806.
Cosgrove, S. A. (1927). Ibid., **14**, 751.
Hugill, J. T., and Gillespie, C. (1948). *Canad. med. Ass. J.*, **58**, 146.
Resnick, L. (1945). *British Medical Journal*, **2**, 722.
Thomas, R. C. (1942). *J. Obstet. Gynaec. Brit. Emp.*, **49**, 247.
—— (1944). Ibid., **51**, 324.

CAUDAL ANALGESIA

BY

T. C. THORNE, *M.C.*, M.R.C.S., L.R.C.P., D.A.
Anaesthetic Registrar, Rochford General Hospital; Clinical Assistant, Southend General Hospital

Professor Hingson's recent visit to this country and his lectures and publication (Hingson, 1949) on continuous caudal analgesia will undoubtedly give a fresh stimulus to the interest aroused on this subject by his earlier publications.

It is unlikely that continuous caudal analgesia will be used extensively in this country in the immediate future for the relief of pain in normal labour and delivery, because of the lack of trained personnel to induce, supervise, and maintain analgesia, though Galley (1949) has published a series of such cases. Nevertheless, it is clear that the continuous method can play an extremely useful part in the treatment of angiospastic states, and, in the words of a recent *B.M.J.* Editorial (1949), "can confer benefits to mother and baby which they should not be denied, and it is to be hoped that obstetricians in this country will not be satisfied until they can obtain it at least for those mothers for whom it is specially indicated."

The attention which has now been focused on continuous caudal analgesia should not be allowed to push further into the background the single-injection technique of producing caudal analgesia in surgery and obstetrics, a method which has been neglected in this country. Even in the U.S.A. there seems to be a body of opinion which prefers the single-injection technique (which has been widely used in surgery) rather later in labour, employing long-acting drugs and repeating the needle insertion and injection if necessary (Cullen, 1946; Brown, 1948; Crawford and Chester, 1949) because of the possible dangers of the continuous technique using a needle and the increased difficulty of insertion using a catheter. Moreover, in the average hospital in this country it is unlikely that enough continuous caudal blocks will be required to allow many to become really proficient in the art of inserting a needle into the caudal canal.

It is my object to draw attention to the usefulness of the single-injection technique in inducing analgesia in surgery and obstetrics and at the same time in providing training in needle insertion, to describe some cases in which continuous caudal analgesia has been used, and to mention some of the difficulties and complications associated with the insertion of a needle into the caudal canal.

Single-injection Caudal Analgesia

Up to 1943 very little had been published on the subject in this country. Wilson (1931), Poole (1941), and Anderson (1949) reported on its use in labour; Mitchell (1933) recommended it in prostatectomy; and Hewer (1943) described its use but preferred low spinal analgesia. Molesworth (1946), Lee (1947), Goldman (1948), Minnitt and Gillies (1948), and Dawkins (1949) describe and generally recommend it, mainly in vaginal and rectal operations and for forceps delivery. Hewer (1948) still prefers low spinal analgesia. Corlette (1948) regards it as a dangerous method apt to produce shock and with a high failure rate. At the 1948 Annual Meeting of the B.M.A. Steel (1948) recommended its use, but in the discussion which followed several speakers objected to it because of the risk of collapse and because of the unpredictability of analgesia. Kenny (1947) introduced "proctocaine" by the caudal

route for the treatment of pain due to inoperable pelvic carcinoma.

In my series it has been used in the following cases:

	Successes	Failures
Prostatectomy and cystoscopy	33	5
Haemorrhoidectomy	26	1
Vaginal repairs	109	14
Forceps delivery	10	0
Herniotomy	3	0
Relief of pain	2	0
	183	20

In addition there have been three cases in which the sacro-coccygeal membrane could not be located with the needle and two cases which were rejected at pre-operative examination because of inability to palpate the sacral hiatus.

Prostatectomy.—In this operation it has been used to reduce stimulation from digital enucleation under moderately deep general anaesthesia and to secure haemostasis (Rowbotham, 1947), though for the latter purpose with no noticeable success, possibly because the block extended above the sacral segments with the dose used—20 ml.

Haemorrhoidectomy, Including All Anal Operations.—Caudal block is considered to be the ideal method for these cases, as doses of 15 to 20 ml. provide complete relaxation and analgesia to be equalled only by the low spinal method with its risk of headache.

Vaginal Repair, Including Vaginal Hysterectomy.—The main advantage is reduction in haemorrhage. For Fothergill's repair and vaginal hysterectomy 35 to 40 ml. is required.

Forceps Delivery.—For the handicapped mother or foetus low spinal analgesia has been used with good results in over 40 cases, but with severe post-operative headache in seven. Caudal block is now used in preference to spinal analgesia when time is not a factor; dose—35 to 40 ml.

Herniotomy.—Excellent operating conditions are provided without complete muscular flaccidity by doses of 40 ml. with analgesia at about T 10.

Pain Relief.—A 43-year-old woman with fourth-stage carcinoma of the cervix required morphine for intractable pain in the legs. Proctocaine, 35 ml., gave immediate relief. There was paralysis of sphincters for 24 hours. On discharge three weeks later she was still pain-free and ambulant. She died three weeks after discharge.

Continuous Caudal Analgesia

1. *With Hingson's caudal needle (4 cases)*

Case 1.—A 26-year-old primipara at the 37th week of pregnancy, with eclampsia (one fit), had induction performed after 36 hours; 12 hours later she was in labour. As she had oliguria—36 oz. (1 litre) in 48 hours—and was very restless though heavily sedated, caudal block was established, being maintained for 6½ hours; delivery was by low forceps and episiotomy. The baby weighed 4 lb. 2 oz. (1.87 kg.). During block, 9 oz. (256 ml.) of urine was passed, and diuresis continued.

Case 2.—A 23-year-old primipara at term, in labour with a large vulval haematoma increasing in size, painful, and extremely tender. Two injections were given before delivery by low forceps and episiotomy.

Case 3.—A 19-year-old primipara, at the 32nd week of pregnancy, had bilateral ovarian cystectomy performed, and three days later went into premature labour. Towards the end of the first stage she felt as if the abdomen were bursting, and became very distressed. Two injections were given before delivery, by low forceps and episiotomy, of a 4½-lb. (2-kg.) baby.

Case 4.—A 22-year-old primipara, at term with very flat pelvis, received six injections for forceps delivery, which provided good analgesia for 12 hours; delivery was by high forceps and episiotomy.

The babies in the above cases cried immediately, and the third stages were normal, with minimal bleeding.

2. *With polythene tubing (size 1) passed through a 15-gauge Barker spinal needle (4 cases)*

Case A.—Thrombophlebitis with typical white leg occurred in a woman of 29 three weeks after caesarean section. The right leg was very painful and tender, with 3-in. (7.6-cm.) swelling; temperature 101° F. (38.3° C.). Caudal analgesia provided complete relief from pain, so that she was able to move the leg and carry out exercises. The temperature fell rapidly. In 3½ days she received 14 injections to produce intermittent analgesia as recommended by Lull and Hingson (1948). The bed was fixed in the 15-degree Trendelenburg position and she was seen by the physiotherapist. The polythene tube was removed eight days after insertion; she was then allowed up. The small skin wound healed cleanly. On discharge 23 days after admission there was a ¾-in. (1.9-cm.) swelling and slight ache on prolonged standing. Three months later there was no oedema, aching, or disability, and the swelling was reduced to ½ in. (1.27 cm.).

Case B.—A 25-year-old primipara, with severe pre-eclamptic toxaemia and a very small baby. Two hours after caudal block was instituted it was found that the polythene tube had broken at the skin surface. The proximal piece was recovered with some difficulty, after incision under local analgesia. The tube was acutely angulated as it left the skin, and this, combined with the supine position, was the probable cause of rupture. Fourteen days later, the wound having healed by first intention, the block was re-established and maintained for 3½ days, though after the first day without much effect on the blood pressure; it was therefore abandoned and labour induced, with delivery of a 20-oz. (567-g.) baby, which lived a few hours. As the result of experience with this case, it is believed that to maintain a reduction of blood pressure the tube should be inserted well inside the canal, as high as the lumbar region if possible.

In addition, polythene tubing has been used in two prostatectomies without incident.

Technique and Complications

1. Invariably it has been found that when the needle is correctly placed injection is extremely easy, and that analgesia of S 4 and 5 is present within five minutes.

2. Lumbar puncture and Hingson's caudal needles have been most often employed, but in thin patients No. 1 intravenous or No. 17 hypodermic needle is quite satisfactory.

3. When boiled, polythene tubing tends to swell and may no longer pass through a 15-gauge needle; therefore the alternative method of sterilization by soaking in 1% "cetavlon" has been used.

4. After the first 30 cases the test dose was not employed except in those requiring continuous caudal analgesia. Dural tap has occurred once, and was immediately obvious.

5. Bloody tap has occurred 32 times; after moving the needle, aspiration is usually negative and injection can then be made safely.

6. Toxic reactions occurred in six cases, including convulsions in three, all in elderly patients; some of these reactions may have been partially intravenous, but it must be remembered that symptoms may be produced by too rapid injection, particularly in the elderly. Except in the eclampsia cases the blood pressure has not fallen more than 25 mm. in the whole series.

7. In five of the 20 failures injections were not completed, because of bloody or dural tap. Of the 15 cases in which injections were completed, in three the injections were unilateral and in four probably partially intravenous;

the remaining eight occurred early and were probably dorsal to the sacrum.

Summary

A series of 203 cases of single-injection analgesia and 8 cases of continuous caudal analgesia have been described. The single-injection technique is shown to be an extremely useful method of producing analgesia in vaginal repairs and forceps delivery, and an ideal one for anal operations. In addition it provides training in needle insertion. Some of the difficulties and complications are mentioned.

I wish to thank Dr. J. A. Lee for interesting me in caudal analgesia and for continuous help and encouragement ; Miss E. M. Whapham, Mrs. F. Bridge, and Mr. B. J. Sanger for their co-operation and permission to publish case reports ; and the theatre and labour-ward staffs for their assistance.

REFERENCES

Anderson, A. F. (1949). *British Medical Journal*, **1**, 233.
British Medical Journal (1949). **2**, 801.
Brown, W. E. (1948). *Amer. J. Obstet. Gynec.*, **55**, 717.
Corlette, C. E. (1948). *A Surgeon's Guide to Local Anaesthesia*. Bristol.
Crawford, O. B., and Chester, R. V. (1949). *Anesthesiology*, **10**, 473.
Cullen, S. C. (1946). *Anesthesia in General Practice*. Chicago.
Dawkins, C. J. M. (1949). In *Modern Practice in Anaesthesia*, edited by Frankis T. Evans. London.
Galley, A. H. (1949). *Anaesthesia*, **4**, 154.
Goldman, V. (1948). *Aids to Anaesthesia*, 2nd ed. London.
Hewer, C. L. (1943). *Recent Advances in Anaesthesia*, 4th ed. London.
—— (1948). Ibid., 6th ed. London.
Hingson, R. A. (1949). *British Medical Journal*, **2**, 777.
Kenny, M. (1947). Ibid., **2**, 862.
Lee, J. A. (1947). *A Synopsis of Anaesthesia*. Bristol.
Lull, C. B., and Hingson, R. A. (1948). *Control of Pain in Childbirth*. Philadelphia.
Minnitt, R. J., and Gillies, J. (1948). *Textbook of Anaesthetics*, 7th ed. Edinburgh.
Mitchell, W. E. M. (1933). *Lancet*, **2**, 348.
Molesworth, H. W. L. (1946). *Regional Anaesthesia*, 2nd ed. London.
Poole, W. H. (1941). *J. Obstet. Gynaec. Brit. Emp.*, **48**, 84.
Rowbotham, S. (1947). *Anaesthesia*, **2**, 70.
Steel, G. C. (1948). *British Medical Journal*, **2**, 92.
Wilson, J. St. G. (1931). *Lpool med.-chir. J.*, n.s. **5**, 138.

Medical Memoranda

Experiences with "Diparcol"

Many methods have from time to time been introduced for treating Parkinson's syndrome and later discarded after apparent early successes. The evaluation of any remedy under controlled conditions is complicated by the varied aetiological factors and clinical features of the sufferers. Nevertheless any new therapeutic measure which is basically sound justifies critical examination. The claims made by Sigwald *et al.* (1947), using diethazine hydrochloride, or "diparcol," were such that a confirmatory investigation was made for a period of six months during 1948 at the Grove Road Hospital, Richmond, Surrey.

CLINICAL INVESTIGATION

Nine unselected patients with Parkinson's syndrome were treated with diparcol. Four cases were probably post-encephalitic ; three were of the senile vascular type ; one was of uncertain aetiology, possibly the result of head injury ; and one was ultimately found to be suffering from a small glioma in the right putamen. All had been under continuous observation for several years and had been given solanaceous alkaloids, with no more than temporary benefit. The average daily dose of diparcol, slowly attained, was 1 g. in three equal portions, the maximum daily dose being 1.5 g.

All patients were subjected at different times to various methods of control. Generally speaking, alkaloid treatment, if still in progress, was alternated with diparcol, dummy tablets containing lactose and also capsules of "benadryl" being substituted for the latter. Three patients (two post-encephalitics and one senile vascular case) showed significant improvement. In one of these it was dramatic. From being absolutely helpless and bedridden the patient was at the end of two months able to walk unaided, dress herself, knit, and generally help the nursing staff in ward duties. She was discharged home after maintaining this sensational improvement for several months. In another case the improvement was pronounced. The third patient, who was previously rigid and helplessly bedridden, was rendered free to move about in bed and feed herself.

Experience with these cases revealed that, whereas the subjective and objective signs of illness were not appreciably altered, the degree of motor control regained was such that the patients were enabled to lead a purposeful life—knitting, sewing, or doing useful domestic work. This improvement has been maintained.

Six patients showed no significant response to diparcol treatment, but one of these was found post mortem to have a cerebral glioma, so he could justifiably be excluded from the series.

No blood dyscrasia or other serious complication was observed during treatment. The only side-effect of diparcol requiring comment is the mental depression which occurs in some patients ; amphetamine should be given in an attempt to control this symptom.

In general, the results of this investigation revealed that in certain instances diparcol may appreciably benefit sufferers from Parkinson's syndrome. It seems likely that only an adequate therapeutic test will reveal the type of case likely to show the greatest degree of response.

I wish to express my thanks to Dr. W. R. Thrower, consulting physician to May and Baker, Ltd., for advice and assistance during the investigation and for the supply of diparcol tablets for clinical trial.

R. M. GRAY, M.B., B.S.,
Medical Officer, British Railways.
Newcastle-upon-Tyne.

REFERENCE

Sigwald, J., *et al.* (1947). *Rev. Neurol.*, **79**, 683.

Profuse Haemorrhage from Ruptured Corpus Luteum Simulating an Ectopic Pregnancy

Rupture of a corpus luteum or Graafian follicle may occasionally give rise to symptoms suggestive of an extra-uterine gestation or appendicitis. For this reason it is well known that at operation for ectopic pregnancy blood may be found in the pelvis although no ectopic pregnancy is discovered. What is, perhaps, less well known is the extent of the bleeding which may follow such follicular rupture.

Weil (1939) reported 30 cases in which bleeding was found at operation to be due to rupture of a corpus luteum or Graafian follicle, and five others in which the diagnosis was made and conservative treatment carried out. In 11 cases the amount of blood found was about a pint (570 ml.). Weil states that any amount from 10 ml. to a litre may be discovered. This is illustrated in the case here described, in which 2 pints (1.1 litres) of blood were removed from the abdomen at operation.

CASE REPORT

The patient, a 3-gravida 2-para aged 25, was admitted to hospital at 6 p.m. on January 9, 1949, as a case of ruptured ectopic pregnancy. Her last pregnancy occurred four years previously. She had experienced acute pain in the right iliac fossa on rising early that morning; she had felt faint and sick and had returned to bed. The pain had persisted and spread across the lower abdomen to the left side. Twice during the day she had been sick, and on trying to get up the feeling of faintness had returned. There had been no shoulder-tip pain, vaginal bleeding, or urinary symptoms. The date of her last menstrual period was December 8, 1948, and she was normally regular every 28 days for 3–4 days. It was unusual for her period to be a few days late in this way.

The patient was pale and shocked, showing shallow rapid respirations. Her pulse was weak and 88 per minute; her blood pressure was 110/70. Abdominal examination showed guarding across the lower abdomen, maximal in the right iliac fossa, with tenderness in the same region. Shifting dullness could be elicited. On vaginal examination there appeared to be a doughy mass in the right fornix, which was displacing the uterus to the left, but tenderness was pronounced and the examination was not conclusive. Although there was no vaginal bleeding, the patient's general condition, together with the abdominal and vaginal findings, supported a diagnosis of intraperitoneal bleeding from ruptured ectopic pregnancy, and laparotomy was decided upon.

At operation the abdomen was found to contain about 2 pints of clotted and liquid blood. No lesion of the uterus or tubes could be seen. On the surface of the right ovary was a small vessel running across a retention cyst which had evidently ruptured. The vessel was bleeding steadily. The small cyst was resected from the remaining ovarian tissue, the bleeding controlled, and the ovary sutured. Although a careful search by palpation was made of the rest of the abdomen, no further lesion was discovered which might have caused the bleeding, and it was concluded that this tiny vessel was to blame. The abdomen was closed and the patient returned to the ward with an intravenous blood drip running.

An uninterrupted recovery was made. There was some lower abdominal pain on the first and second days following operation, but thereafter her stay in hospital was uneventful. She was discharged on the fourteenth day.

Pathological Report.—The small cyst removed proved to be a corpus luteum showing some areas of haemorrhage.

Whilst haemorrhage of this magnitude would necessitate laparotomy in any event, it might be of value to know that rupture of a corpus luteum or Graafian follicle can cause severe bleeding; thus prolonged and extensive search for other causes, to the detriment of the patient, might be avoided.

C. J. DEWHURST, M.B., M.R.C.O.G.

REFERENCE

Weil, A. M. (1939). *Amer. J. Obstet. Gynec.*, **38**, 288.

Rupture of Oesophagus during Childbirth

Spontaneous rupture of the oesophagus has often been reviewed, from the first reported case in 1723 of Baron de Wassenaer, the Grand Admiral of Holland, by Hermann Boerhaave, to the last review by Barrett in 1946. The most common site for perforation is just above the diaphragm, longitudinally, in the left postero-lateral aspect of the oesophagus. The commonest error at necropsy is failure to dilate the oesophagus with water *in situ* and thus demonstrate the rupture. The following case was associated with a prolonged labour, a cause not previously recorded.

CASE REPORT

The patient, a married woman aged 37, was pregnant for the first time. No history of oesophageal disease or abnormality was obtained. The expected date of delivery was June 5, 1949, but the pregnancy proceeded normally until June 11, when labour started. She made no mention of pain in the chest, but it must be remembered that fairly strong labour pains were occurring and she was a little mentally distressed, apart from being physically tired. A moderate dyspnoea developed some 36 hours before delivery and abdominal distension had occurred about the same time. In view of the fact that the dyspnoea was most marked when lying down, abdominal distension was blamed. On June 15 at 2.45 p.m. the temperature rose to 101° F. (38.3° C.). Intramuscular penicillin was given, and by 8 a.m. on June 16 the temperature had dropped to 97.2° F. (36.2° C.). Previously at 1 a.m. the patient had had a mild shivering attack, and a catheter specimen of urine showed a well-developed urinary infection.

By 9 a.m. on June 16 the cervix was fully dilated and the contractions were powerful. Delay in the second stage occurred: ethyl chloride and open ether were given and forceps applied. A healthy female infant was born at 12.35 p.m. A very severe post-partum haemorrhage of approximately 80 oz. (2.27 l.) followed. After the anaesthetic the patient failed to recover consciousness. The breathing was stertorous and the lips and nails were cyanotic. Three pints (1.7 l.) of blood and two bottles of plasma were given, but at 12.45 a.m. on June 17 death occurred.

A post-mortem examination was carried out twelve hours after death. Abdominal distension was marked, but cyanosis was not a feature. No surgical emphysema was present. On opening the abdomen the distension was found to be due to a large amount of gas in the small intestine. The uterus had contracted satisfactorily and the placental site was clean. In the chest, the whole of the left thoracic cavity was filled with a slightly offensive dirty brown fluid. The right side contained approximately half a pint (280 ml.) of clear pale-yellow liquid. Inflation of the oesophagus was not carried out, but 1 in. (2.5 cm.) above the cardia on the left postero-lateral aspect a rupture was demonstrated. Blackening and autolysis of the oesophagus and posterior mediastinum were such that its exact size was difficult to define, but it was in the neighbourhood of ½ in. (1.25 cm.). In the posterior oesophageal wall, running longitudinally upwards, was a thin pouch of mucous membrane about ¾ in. (1.9 cm.) in depth. The mouth of this pouch was situated at the site of rupture and from its structure and position was doubtless due to a splitting of the epithelium and was not congenital in origin. An absence of epithelium around the tear was found by Collis, Humphreys, and Bond (1944) which could not be demonstrated on the opposite wall of the oesophagus. There was no evidence of previous oesophageal abnormality. The lower lobe of the left lung was completely collapsed and the upper lobe partially so. Bronchopneumonic changes, confirmed histologically, were present in both lobes. The mediastinitis was practically confined to the posterior mediastinum and there was no evidence of surgical emphysema.

I consider this case to be one of spontaneous perforation. However, it is possible that the degree of autolysis present may have hidden some other underlying pathology that could not be demonstrated at necropsy. Both from the history and from the post-mortem appearances the rupture doubtless occurred about 48 hours before death.

I wish to express my thanks to Mr. H. Burt-White for permission to publish this case, and to Dr. L. H. D. Thornton and Dr. E. M. Martland for their advice and criticism.

H. W. H. KENNARD, M.B., B.Chir.,
Assistant Pathologist, Salisbury Area Pathological Service.

REFERENCES

Barrett, N. R. (1946). *Thorax*, **1**, 48.
Collis, L. J., Humphreys, D. R., and Bond, W. H. (1944). *Lancet*, **2**, 179.

Reviews

BRITISH OBSTETRICS

Operative Obstetrics. By J. M. Munro Kerr, LL.D., F.R.C.O.G., and J. Chassar Moir, F.R.C.S.Ed., F.R.C.O.G. Fifth edition. (Pp. 948; 390 illustrations. £3 3s.) London: Baillière, Tindall and Cox. 1949.

Rumours of a new edition of this justly famous book have been circulating among obstetricians for several years, and anticipation has been so prolonged and eager that there was some fear the work might not prove equal to it. Such fears were needless, and the new production can survive this and even sterner tests, although delay in publication makes it not absolutely up to date in a few places.

Professor Chassar Moir now collaborates with Professor Munro Kerr, and the combination of a modern obstetrician of original outlook with one who practised when midwifery was an art (yet preserves an ever-youthful spirit and an awareness of new developments) is a happy one. If the character of the book is vastly changed, it is only in accord with the changing character of midwifery, and clearly every effort has been made to preserve the best of the past and to make it take its rightful place among modern methods. The minutiae of obstetric manœuvres, well known to older generations but in danger of being forgotten, are particularly well described, and the chapter on anaesthesia and analgesia deserves special mention. Both authors also contribute a wide knowledge of the literature, and the result is not only a connoisseur's bibliography (up to 1947) but a scholarly and practical guide.

The carefully argued and wise assessment of the place of various treatments, whether Caesarean section or a particular antiseptic, is admirable. Yet there is no lack of courage and conviction. As in all former editions the overriding impression left on the mind of the reader is an authoritative and honest exposition based on experience, knowledge, and wisdom.

As might be expected, the value of antenatal and intranatal radiography is emphasized, but the danger of overemphasis has been largely avoided. After the modern outlook of the introductory chapters covering general principles it is at first surprising to find later full accounts of many instruments and procedures which are generally regarded as obsolete, but the authors take care to provide explanations which are both attractive and disarming. Bozzi's dilator, for instance, is described "if for no other reason than to prevent future operators inventing similar instruments"; others are included to provide an historical background and sometimes "because there are few procedures, recommended by reputable obstetricians, which have not a place in exceptional circumstances." It is indeed a book for those who specialize in obstetrics and who take delight in the art of choosing exactly the right line of treatment for any given circumstances—as necessary to them in their work as a pair of obstetric forceps or as a pint of cross-matched blood.

The last chapter on the factors influencing maternal and foetal death rates is by Mr. C. Scott Russell, and Mr. J. H. Peel contributes a note on caudal analgesia. The authors and publishers deserve thanks for producing what will be regarded as a comprehensive account of modern British intranatal technique. As such it will have a world-wide circulation, and British obstetricians could not wish to have a better ambassador.

T. N. A. JEFFCOATE.

THE WORKER'S EYES

Occupational Eye Diseases and Injuries. By Joseph Minton, F.R.C.S. (Pp. 184; illustrated. £1 1s.) London: William Heinemann Medical Books. 1949.

In this country no book had previously appeared on occupational eye diseases and injuries, although French and American literature is more richly supplied. Mr. Minton's small treatise on this subject is therefore welcome, for this is undoubtedly a problem of considerable magnitude which is only just beginning to receive the attention it warrants.

Most of the book is concerned with injuries sustained in industrial processes—contusions of the eye, chemical injuries and burns, foreign bodies, occupational keratitis and conjunctivitis, and the effects of radiant energy (such as radiational cataract). Other subjects touched upon are the problem of the one-eyed worker, the employment of the blind and partially blind, the value of visual tests in the selection of personnel for industry, the importance of illumination, and the scientific employment of colour schemes in factories. Finally, the methods of protection of the eye in dangerous trades and the prevention of eye injuries are stressed. The book is simply written and should be readily followed by factory medical officers and many others who are interested in the welfare of workers, even although their ophthalmological knowledge is small.

STEWART DUKE-ELDER.

GUIDE TO Rh IMMUNIZATION

Haemolytic Disease of the Newborn. By M. M. Pickles, D.M. (Pp. 181. 15s.) Oxford: Blackwell Scientific Publications.

This book aims at providing a working knowledge of the aetiology, natural history, and treatment of haemolytic disease of the newborn. The author has made wide use of the literature and drawn from her own extensive experience at Oxford to produce an account in which the points of practical importance are emphasized, while academic discussion is kept to the minimum.

The book starts with a short history of the discovery of the Rh factor, maternal immunization, and the different antibodies which revealed the existence of the various Rh antigens and genotypes. Dr. Pickles gives a lucid account of Rh antigens and antibodies, in which the notation of Fisher and Race is wisely adopted, and Wiener's 1943 nomenclature is also given to antigens. An important chapter on the relation between the Rh factor and haemolytic disease includes an assessment of the facts needed for the prognosis of present and future pregnancies. The indications and technique for treatment of the newborn infant by simple and exchange transfusion are fully discussed. The danger of transfusing women and girls without previous Rh typing is rightly stressed, for it is a potent method of producing antibodies and reducing the chances of an Rh-negative woman having even one or two healthy infants.

In the description of the effects of the antigen-antibody reaction in the foetus, the disease is classified into two main groups: (1) the necessarily fatal forms—hydrops and macerated foetus; (2) those cases which may survive—icterus gravis and anaemia neonatorum. In the former group, emphasis is laid upon differential diagnosis from other conditions, in order that a prognosis may be formed on future pregnancies. In the latter, the emphasis is upon the clinical, haematological, and serological observations

which must guide treatment. The estimation of reticulocytes in affected infants is shown to be a more useful procedure than has been generally appreciated. An appendix gives the technique of Rh grouping, genotype determination, and the detection and titration of antibodies.

Of the very few typographical errors, the following are of some importance. In Table XVI, the genotype R_0r is represented by CDe/cDe instead of cDe/cde; on page 162, R′r is represented by CDe/cde instead of Cde/cde, while on page 157 a reference to Table XVI should be to Table XVIII. It is stated on page 158 that cells containing D^u may give a false positive reaction with some anti-D sera. The danger of the D^u component is that it gives a false negative reaction with some antisera and may in consequence be mistaken for d, although it can act antigenically as D.

This book can be recommended to all whose work includes practice in obstetrics, paediatrics, and blood transfusion therapy. It provides all the information necessary to apply the recently acquired knowledge on phenomena associated with Rh immunization, and gives the reader an understanding of the subject which could otherwise be obtained only by diligent reading of the extensive literature of the past decade.

J. R. ANDERSON.

A FRENCH SYMPOSIUM

Les Acquisitions Médicales Récentes. By several authors. (Pp. 297; 78 figures. 1,100 francs.) Paris: Editions Médicales Flammarion. 1948.

It has often been thought that the liaison between the medicine of the English-speaking and the French-speaking countries is not as close as it should be. Each has much to contribute to the other. This collection of 20 reviews by experts is therefore to be welcomed, as it goes far to span the gap. Its value will be much greater to French than English readers, as good reviews already exist in English of most of the subjects discussed. But special mention should be made of an excellent and authoritative account of the synthetic antihistamine drugs, with special reference to their pharmacology, by Dr. Halpern, whose school has contributed so much to the development of these substances. This review contains a full bibliography of 126 references.

Professor Hamburger writes on the treatment of asthma, and suggests that the over-enthusiastic use of ephedrine and other sympathomimetics leads to progressive aggravation of the disease; he produces clinical and experimental evidence in support of his view. He points out that in a severe case difficulty in expectorating is dangerous, as it is likely to lead to death from bronchial obstruction. The maintenance of a loose sputum is important, for which the restoration of body fluids and the administration of sodium benzoate are advocated. The same author reviews modern renal function tests and recommends the simultaneous intravenous injection of mannitol and sodium para-amino hippurate for assessing glomerular and tubular function.

Recent developments in the aetiology and therapy of liver disease and of adrenal disorders are well reviewed, but no references are given; a survey is made of the uses to which radioactive isotopes are being put in medicine (references are given here). Other subjects which are well described are the use of refrigeration in therapy (with a full bibliography) and the radiology of the vertebral column, which is illustrated with plates. Also reviewed are the present status of B.C.G.; the treatment of chronic rheumatism; the Libman–Sachs syndrome; modern cancer therapy; progress in immunology; and the treatment of menstrual disorders.

A criticism of some of the reviews is that they refer freely to the findings of other workers who are named, but no references are given through which these can be traced. Such a work as this should not only stimulate interest but facilitate further reading in the original literature. By this criterion some of the contributions succeed well, but others are disappointingly deficient. The book should nevertheless be of value to the French readers for whom it is written.

C. L. COPE.

HISTORY OF PHYSIOLOGY

A Short History of Physiology. By Kenneth J. Franklin, D.M., F.R.C.P. Second edition. (Pp. 147; illustrated. 10s. 6d.) London: Staples Press. 1949.

The new edition of the *Short History of Physiology* by the professor of the subject at the Medical College of St. Bartholomew's Hospital should be in the hands of every medical student in his preclinical years. Those who are more advanced in their studies will find it an admirable reference book to which to turn.

All writers of histories of science and medicine find it difficult, as Professor Franklin has, to give adequate space to the modern period. Up to the eighteenth century the sailing is clear enough, but the vast and rapid accumulation of new knowledge during the nineteenth and twentieth centuries and the opening of innumerable new lines of thought bewilder us all. The historian to whom we look for help usually succumbs himself. Instead of providing us with an Ariadne thread to lead us through the labyrinth, he is liable to get lost in it himself or, at best, to get his thread into a hopeless tangle. Thus his long and chaotic terminal chapter is only too likely to become a list of names and dates to which are tagged the labels of "discoveries." Professor Franklin has largely avoided this by subdividing his final chapter into a series of topics which have from time to time been investigated with special intensity. If he has perhaps unleashed rather too many of these topics on the student, he has produced a text that glows with his own generous enthusiasms and displays his science as a living and growing organism. The student of physiology can have no pleasanter entry into the history of his subject, which can unite its ever-increasing number of special developments, than that here offered him at a notably low price.

CHARLES SINGER.

RECONSTRUCTIVE SURGERY

Atlas of Plastic Surgery. By M. I. Berson, M.D. (Pp. 304; 1,207 illustrations. £3 15s.) London: William Heinemann. 1948.

This atlas illustrates many of the standard procedures of plastic surgery, starting with the method of suture of a simple wound and including the complicated repairs made necessary by the loss of any of the facial organs. The illustrations and line drawings leave little to be desired for clarity. As illustrations they are ideal: as methods of teaching they would seem to be but a small adjuvant to practical work. The choice of the various procedures to be illustrated is naturally influenced by the practice of the author, and it would be a mistake to assume that British plastic surgery could be adequately represented by an atlas

of which over one quarter is allotted solely to nasal reconstruction and only twenty pages to the treatment of cleft lip and palate.

RAINSFORD MOWLEM.

WORDS, WORDS, WORDS

Blakiston's New Gould Medical Dictionary. Editors, H. W. Jones, M.D., N. L. Hoerr, M.D., and A. Osol, Ph.D. With the co-operation of an Editorial Board and 80 contributors. (Pp. 1,294; 252 illustrations on 45 plates, 129 in colour. $8.50.) Philadelphia: The Blakiston Company. London: H. K. Lewis and Co. 1949.

Medical Etymology. The History and Derivation of Medical Terms for Students of Medicine, Dentistry, and Nursing. By O. H. Perry Pepper, M.D. (Pp. 263. £1 7s. 6d.) Philadelphia and London: W. B. Saunders Company. 1949.

The appearance of these two books should be welcomed as a sign that the medical profession is becoming interested in words. Gould's *Medical Dictionary* is a sumptuous volume of nearly 1,300 pages which must include every medical and para-medical term in general use, as well as many thousands which are never used at all. The eighty contributors have shown great diligence in collecting so many terms. Their definitions are short and lucid, and their phonetic spelling teaches us how these words are pronounced in the U.S.A. In addition to simple definitions there are short biographical notes and tables of anatomical structures and of doses. There is also a notable list of phobias, ranging from gephyrophobia and climacophobia to triskaidekaphobia and siderodromophobia.

The book contains more definitions than any previous medical dictionary, but it lacks the touch of an inspired lexicographer. There is much here of the harmless drudgery of compilation, but no indication whether the word defined is archaic or in common use, or by whom and when it was first employed. It is perhaps too much to look for the principles of the *O.E.D.*, but unilluminated by a critical spirit it will remain an uninspired, if exhaustive, compendium.

Professor Perry Pepper's *Medical Etymology* is a less ambitious work which aims to introduce the student to the bewildering terminology of medicine and its ancillary sciences. Words in common use are explained, with their origins and derivations. Such terms as abepithymia, gonecystopyosis, and hyperleptorrhine, which abound on every page of Gould's dictionary, are rightly excluded. A certain archness will not be to every reader's taste: pseudocyesis, for instance, is said to occur in "hysterical women and even in female dogs," and semen is defined as the "seed without which the obstetricians would be out of a job." Despite such lapses the book should prove useful to the student who is interested in the terminology of his profession.

R. BODLEY SCOTT.

In Great Britain that highly undesirable functionary the nurse-anaesthetist has been abolished, but the increased use and complexity of anaesthetic apparatus and technique which have effected her banishment make essential demands on the theatre nurse. Unfortunately, the nurse's knowledge of anaesthesia usually rests on a perfunctory lecture from the sister-tutor and a totally out-of-date, sketchy, and misleading chapter in a nurse's textbook of surgery. Dr. Langton Hewer's booklet, *Outline of Anaesthesia from the Nurse's Viewpoint* (pp. 24; 1s. 6d.; London: *The Hospital and Social Service Journal*, 1950), is exactly what is required to counteract this unsatisfactory instruction. He has briefly and clearly described modern anaesthetic methods and instruments in language easily comprehensible to the junior theatre nurse, and has instructed her in her highly important duties towards the unconscious patient and the anaesthetist's apparatus. It is a book which should be recommended to all nurses and orderlies working in the operating theatre.

BOOKS RECEIVED

Review is not precluded by notice here of books recently received

Finding the Missing Link. By R. Broom, D.Sc., F.R.S. (Pp. 104. 6s.) London: Watts. 1950.

The Common Diseases of the Skin. By R. Cranston Low, F.R.C.P.Ed., F.R.S.Ed., and G. A. Grant Peterkin, M.B.E., F.R.C.P.Ed. 4th ed. (Pp. 282. 21s.) London and Edinburgh: Oliver and Boyd. 1949.

Surgery for Nurses. By J. Moroney, F.R.C.S. Foreword by D. M. Smith, O.B.E. (Pp. 644. 27s. 6d.) Edinburgh: Livingstone. 1950.

The 1949 Year Book of General Surgery (August, 1948-July, 1949). Edited by E. A. Graham, A.B., M.D. (Pp. 707. 37s. 6d.) Chicago: The Year Book Publishers. London: Lewis. 1949.

Recent Advances in Social Medicine. By A. C. Stevenson, M.R.C.P., D.P.H. With a chapter by E. A. Chesseman, B.Sc., Ph.D. (Pp. 241. 18s.) London: Churchill. 1950.

Introduction to Public Health Law. By J. J. Clarke, M.A., F.S.S. (Pp. 138. 12s. 6d.) London: Cleaver-Hume Press. 1949.

Outline of Anaesthesia from the Nurse's Viewpoint. By C. Langton Hewer, M.R.C.P., F.F.A.R.C.S. (Pp. 24. 1s. 6d.) London: *Hospital and Social Service Journal* (Reprint). 1950.

Handbook of Medical Protozoology. By C. A. Hoare, D.Sc.Lond. (Pp. 334. 35s.) London: Baillière, Tindall and Cox. 1949.

Injuries of the Brain and Spinal Cord and their Coverings. Edited by S. Brock. 3rd ed. (Pp. 783. 76s. 6d.) London: Baillière, Tindall and Cox. 1949.

Buchanan's Manual of Anatomy. Edited by F. Wood Jones and others. 8th ed. (Pp. 1,616. 45s.) London: Baillière, Tindall and Cox. 1949.

Handbook of Physiology and Biochemistry. By R. J. S. McDowall, M.D., D.Sc. 40th ed. (Pp. 767. 30s.) London: John Murray. 1950.

Clinical Allergy. By L. Tuft, M.D. 2nd ed. (Pp. 690. 84s.) London: Henry Kimpton. 1949.

Relaxation and Exercise for Natural Childbirth. By H. Heardman. (Pp. 32. 9d.) Edinburgh: Livingstone. 1950.

How Chemistry Works. By A. J. Birch, M.Sc., D.Phil. (Pp. 218. 8s. 6d.) London: Sigma. 1949.

Histopathology of the Skin. By W. F. Lever, M.D. (Pp. 449. 75s.) London, Philadelphia, and Montreal: Lippincott. 1949.

Fractures. By P. B. Magnuson, M.D., F.A.C.S., and J. K. Stack, M.D., F.A.C.S. 5th ed. (Pp. 537. 55s.) Philadelphia, London, and Montreal: Lippincott. 1949.

The Diagnosis of Pancreatic Disease. By L. Bauman, M.D. Foreword by A. O. Whipple, M.D. (Pp. 74. 40s.) Philadelphia, London, and Montreal: Lippincott. 1949.

Pollen-Slide Studies. By G. T. Brown, M.D., F.A.C.P. Foreword by W. M. Yater, M.D., M.S. (Pp. 122. 43s.) Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1949.

The Chemistry and Physiology of Growth. Edited by A. K. Parpart. (Pp. 291. $4.50 or 36s.) Princeton, New Jersey: Princeton University Press. London: Geoffrey Cumberlege. 1949.

The Arthropathies. By A. A. de Lorimier, M.D. 2nd ed. (Pp. 335. $7.) Chicago, Ill.: The Year Book Publishers. 1949.

L'Organisation des Os. By P. Lacroix. (Pp. 228. 900 francs.) Liége: Editions Desoer. 1949.

Bronchography. By E. Huizinga, M.D., and G. J. Smelt, M.D. (Pp. 270. No price.) Assen, Netherlands: Van Gorcum. 1950.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY FEBRUARY 18 1950

THE SUPRARENAL CORTEX AND THE HAEMOPOIETIC SYSTEM

Recent studies of the action of the cortical hormones on the haemopoietic system may lead to the opening up of a new field of haematological investigation. The subject has gained interest from the recent reports of the effects of "cortisone" on certain rheumatic diseases, for one of the striking changes observed was the rapid cure of an associated anaemia.[1] The control of the mobile mesenchymal cells, comprising the blood, blood-forming organs, and connective tissues, has long been the subject of speculation. For a time the most fruitful studies were those on red-cell maturation, and they have at all events served to emphasize the fundamental fact that the control of these freely movable cells is likely to be a chemical or endocrine one. Among the many relationships which have been suggested between the endocrine glands and the haemopoietic system, one of the first to be noted was that between the suprarenals and the lymphoid tissues. When Thomas Addison in 1855 first published[2] some "curious facts" on which he had "stumbled" in connexion with the suprarenal capsules, and proceeded with characteristic modesty to hope that these facts might "lead to the subject being properly examined and sifted," he mentioned that there was a "considerable excess of white corpuscles" in the blood of one patient. Furthermore, in the fourth of the eleven cases reported, he was at pains to point out that the lymphoid tissues were hypertrophied, though apparently quite healthy. With the development of modern haematology it became possible to show that Addison's disease was accompanied by varying degrees of lymphocytosis, together with hyperplasia of lymphoid tissue resembling at times the so-called status lymphaticus. In many cases large numbers of lymphoid follicles were found to develop in the bone marrow.[3] Drinker and Yoffey,[4] reviewing the problem in their monograph on the lymphatic system, concluded that of all the endocrines "the adrenals seem to be most definitely involved in the control of the lymphoid tissues," though the exact nature of this control was still far from clear.

The isolation of the pituitary adrenotropic hormone and of individual cortical steroids made possible a more careful experimental analysis of the relationship between the suprarenal cortex and lymphoid tissue. Thus it was noted that pituitary extract or adrenotropic hormone caused thymic atrophy,[5-9] an effect also produced by cortical extract or steroid fractions.[10-12] Selye[13] had concluded that the loss of weight in the thymus associated with the "alarm reaction" was brought about through cortical stimulation via the pituitary, and subsequently it was noted that injections of the pituitary adrenotropic hormone caused loss of weight in the lymphoid tissues generally.[6 7 14] Conversely, in adrenalectomized animals given maintenance doses of desoxycorticosterone there was lymphoid hyperplasia, the desoxycorticosterone being without action on lymphoid tissue.

On the basis of this and other work, and influenced apparently by the traditional view about the essentially defensive role of lymphoid tissue, Dougherty and White[15-17] propounded a new theory to explain the relation between this tissue and the suprarenal cortex. According to this theory certain cortical hormones, especially corticosterone and "Compound E" (cortisone), exerted a direct action on the lymphocytes, either destroying them or causing them to bud off their cytoplasm. In either case gamma globulin was set free. The lymphocytes thus became an important source of antibody. The mechanism controlling antibody liberation operated through the pituitary and its adrenotropic hormone and could be brought into play by various non-specific stress stimuli, as suggested by Selye[13] in his early studies on the adaptation syndrome (alarm reaction). The evidence presented by Dougherty and White in favour of their theory consisted partly of morphological observations on the lymphoid tissues and partly of estimations of the protein and antibody content of plasma and of blood lymphocyte counts. The budding off of cytoplasm was suggested by an old observation of Downey and Weidenreich,[18] and the irregularities in the shape of the lymphocytes seen in dry smears were cited in evidence of it. It is difficult to know how much value to attach to this observation for the support of so far-reaching a hypothesis, since such irregularities may not infrequently be seen in smears or imprints of normal

[1] Hench, P. S., Kendall, E. C., Slocamb, C. H., and Polley, H. F., *Ann. rheum. Dis.*, 1949, **8**, 97.
[2] *On the Constitutional and Local Effects of Disease of the Suprarenal Capsules*, 1855, London.
[3] Hedinger, E., *Frankf. Z. Path.*, 1907, **1**, 527.
[4] *Lymphatics, Lymph, and Lymphoid Tissue*, 1941, Cambridge, Mass.
[5] Moon, H. D., *Proc. Soc. exp. Biol., N.Y.*, 1937, **37**, 34.
[6] Sayers, G., White, A., and Long, C. N. H., *J. biol. Chem.*, 1943, **149**, 425.
[7] Noble, R. L., and Collip, J. B., *Endocrinology*, 1941, **29**, 934.
[8] Dougherty, T. F., and White, A., *Proc. Soc. exp. Biol., N.Y.*, 1943, **53**, 132.
[9] Yoffey, J. M., and Baxter, J. S., *J. Anat., Lond.*, 1946, **80**, 132.
[10] Ingle, D. J., *Proc. Soc. exp. Biol., N.Y.*, 1938, **38**, 443.
[11] —— ibid., 1940, **44**, 174.
[12] Wells, B. B., and Kendall, E. C., *Proc. Mayo Clin.*, 1940, **15**, 133.
[13] *Endocrinology*, 1937, **21**, 169.
[14] Simpson, M. E., Li, C. H., Reinhardt, W. O., and Evans, H. M., *Proc. Soc. exp. Biol., N.Y.*, 1943, **54**, 135.
[15] *Endocrinology*, 1944, **35**, 1.
[16] *Amer. J. Anat.*, 1945, **77**, 81.
[17] *J. Lab. clin. Med.*, 1947, **32**, 584.
[18] *Arch. mikr. Anat.*, 1912, **80**, 306.
[19] Bloom, W., in *Handbook of Hematology* (Edited by Downey, H.), 1938, **2**, Sect. XIX, New York.
[20] Yoffey, J. M., Reiss, M., and Baxter, J. S., *Nature, Lond.*, 1946, **157**, 368.
[21] Reinhardt, W. O., and Li, C. H., *Science*, 1945, **101**, 360.

lymphoid tissue. Furthermore, Dougherty and White[16] noted many lymphocytes which consisted solely of nuclei and concluded that these were cells which had discarded all their cytoplasm, which could subsequently be regenerated. However, the significance of this appearance of naked or apparently naked nuclei is also difficult to assess, since it too may be evident in smears of normal lymphoid tissue, in which the small lymphocyte may contain so little cytoplasm that it is difficult to detect.

The lymphocyte was thus envisaged as "*une glande mobile unicellulaire*" (Ranvier), and its secretion was gamma globulin. Another and radically different way in which the lymphocyte could produce gamma globulin was by undergoing death and dissolution. Pyknotic nuclei would be ingested by macrophages, which were stated to be present in increased numbers after injection of pituitary adrenotropic hormone. The fact that even in normal lymphoid tissue there is always a fair number of macrophages containing the tangible *Körperchen* which may in part be lymphocytes could mean that dissolution of lymphocytes was a normal process due to frequent slight cortical stimulation, but markedly accentuated by increased cortical secretion. This, however, does not accord with the finding that an increased number of macrophages in lymphoid tissue is associated with conditions of increased lymphocytopoiesis.[19] Yoffey and Baxter[9] endeavoured to intensify these changes in lymphoid tissue by giving repeated doses of adrenotropic hormone and cortical extract. They noted lymphocytic depletion of the thymus and lymph glands after adrenotropic hormone, but no sign whatever of increased lymphocyte breakdown. After cortical extract, in fact, they found hyperactivity of lymphoid tissue. Despite the difficulties of interpretation and the complexity of the various factors involved, the possibility suggests itself that the regressive changes in this tissue may be explicable on other grounds than the dissolution of lymphocytes, and the cellular depletion might in fact be due to increased lymphocyte discharge. This would not accord with the frequently associated lymphopenia unless lymphocytes at the same time left the blood stream in even greater numbers. The position is further complicated by the finding,[20 21] on direct measurement of thoracic duct lymphocytes, that there appears to be diminished entry of lymphocytes into the blood after the administration of adrenotropic hormone; for several reasons, however, these experiments are not altogether conclusive.

On the immunological side the finding that lymphocytes contained antibodies[22 23] was followed by the observation that six hours after the injection of adrenotropic hormone or cortical extract there was a marked rise of antibodies in the blood, at the time of maximum lymphopenia.[24 25] This seemed to fit in admirably with the view that the increase in antibodies was due to lymphocyte breakdown, but later work on rats[26] and cats[27] failed to confirm these results. It was found that animals from which the adrenals had been removed and which were maintained with desoxycorticosterone could produce antibodies just as freely as normal animals; that large doses of cortical extract had no effect on the antibody content of plasma when immunity was fully developed; and that there was no constant relation between antibody content and the number of lymphocytes in the blood. It seems clear, then, that, while there is definitely an important functional relationship between the suprarenal cortex and lymphoid tissue, it is by no means entirely explicable in terms of lymphocyte breakdown and antibody formation. However, Dougherty and White[15] also reported changes in the red blood cells and neutrophils after injections of adrenotropic hormone. Before these changes can be more fully explained, and the relationship, if any, between them and the alterations in lymphoid tissue defined, much more attention will have to be paid to the bone marrow. In this connexion it should be emphasized that bone marrow contains many lymphocytes[28]; they are found in a very much higher concentration than in the blood. The lymphocyte concentration in bone marrow may not be fully appreciated by clinical haematologists, since the method of sternal puncture yields for examination a mixture of blood and marrow cells in varying proportions; thus a quantitative assessment of marrow cells is out of the question. In fact the study of the bone marrow is in the same position as the study of the peripheral blood would be if absolute counts were impossible and only stained smears could be examined.

[22] Dougherty, T. F., Chase, J. H., and White, A., *Proc. Soc. exp. Biol., N.Y.*, 1944, **57**, 295.
[23] Harris, T. N., Grimm, E., Mertens, E., and Ehrich, W. E., *J. exp. Med.*, 1945, **81**, 73.
[24] Dougherty, T. F., White, A., and Chase, J. H., *Proc. Soc. exp. Biol., N.Y.*, 1944, **56**, 28.
[25] Chase, J. H., White, A., and Dougherty, T. F., *J. Immunol.*, 1946, **52**, 101.
[26] Eisen, H. N., Mayer, M. M., Moore, D. H., Tarr, R., and Stock, H. C., *Proc. Soc. exp. Biol., N.Y.*, 1947, **65**, 301.
[27] Thatcher, J. S., Houghton, B. C., and Ziegler, C. H., *Endocrinology*, 1948, **43**, 440.
[28] Yoffey, J. M., and Parnell, J., *J. Anat., Lond.*, 1944, **78**, 109.

HEALTH IN INDIA

Since 1925 India's health and education have been controlled entirely by Indian cabinet ministers and Members of Council, for under the Montagu-Chelmsford reforms these subjects were selected as the first to be transferred to Indian administration. In the midst of the recent war, and despite preoccupation with heavy military problems, the Viceroy ordered a survey of the then existing state of health and of medical education in India. A powerful committee, predominantly Indian in composition and under the chairmanship of a distinguished Indian, Sir Joseph Bhore, laboured for two

years. Experts from many parts of the world journeyed to India in 1944 to assist in the great work. In 1945 a report was issued, consisting of a survey of existing conditions and a detailed programme for future development. The Bhore report, with its recommendations for a gigantic State medical service—both preventive and curative—to be built up over a period of 40 years, was well received in India and by the world press, though it was realized that the cost of such a service might be beyond the means of a relatively poor country.

The secretary-general of the Bhore Committee, Dr. K. C. K. E. Raja, is now Director-General of Health Services in India, and in the opening pages of this issue we reproduce the address which he delivered at the Royal Society of Medicine last summer. He draws attention to the difficulties which, from the outset, have prevented the full carrying out of the Bhore proposals. The Governments of both India and Pakistan have made gallant efforts to cope with the results of the Hindu-Muslim massacres of 1947, and the problems caused by millions of homeless refugees and by the hold-up of essential trans-frontier traffic in grains and livestock. Monsoons, particularly in South India, have failed repeatedly, and the financial difficulty is now complicated by the fact that a large and mounting proportion of the national income is being poured out on military preparations as a result of the Kashmir dispute. The provision of new hospitals on a big scale has therefore been postponed, but improvements to and expansion of the existing system of dispensaries and hospitals are being carried out as funds permit. The Bhore Committee recognized the outstanding importance of postgraduate medical education in India, but its recommendation for the foundation of an "Indian Johns Hopkins," a central institute for the training of teachers and specialists, has had to be postponed because of cost. Dr. Raja indicates how immediate needs are being met by the upgrading of the more efficient departments of existing medical colleges into specialized units for the training of teachers. Large numbers of postgraduate students are being sent overseas by the central and provincial governments so that they may obtain experience in subjects, such as virus pathology and neurosurgery, for which adequate training facilities are not available in India. There has been a keen demand for training in the United States, and many senior graduates from India have been welcomed there. But the recent devaluation of sterling currencies may stem the flow of students to dollar areas, and it is incumbent on British institutions to make even greater efforts than at present to extend a warm welcome to visiting graduates from India and Pakistan.

Comparison of infantile mortality rates in India (169 per 1,000 live births in 1944) and in her fellow Dominion of New Zealand (30 in 1944) makes it easy to see why the distinguished lady who holds India's health portfolio is so insistent on early improvement in ante- and postnatal care as well as on better conditions at the time of confinement. One of the difficulties is the maldistribution of doctors, and steps are being taken to encourage practitioners to settle in rural areas. Problems of nutrition, to the urgency of which attention was first directed by Sir Robert McCarrison, are investigated at the All-India Institute of Nutrition, which he founded, and research into malaria, the most serious scourge of India, is undertaken by the All-India Malaria Institute in Delhi.

Dr. Raja passes lightly over the danger caused by the insistent call of some of the most highly placed in India for the reinstatement of the 2,000-years-old Ayurvedic system of medicine. He thinks that "it is quite unlikely that India will turn her back on scientific medicine and follow for sentimental or even mystical reasons any other form of medical practice," but the danger is there. Even quite recently health ministers have proposed more Ayurvedic medical schools, the cost of which would eat into provincial medical budgets just at a time when rapid progress is being made in the scientific control of many of the bacterial and protozoal diseases which afflict India so severely. A hopeful sign is India's active participation in WHO; Indian scientists are serving on its expert committees, and work on cholera and tuberculosis is being carried out in India under the international organization's auspices. Although the Republic of India is now an independent sovereign state she has voluntarily elected to remain within the Commonwealth. Her fortunes and those of her neighbour, Pakistan, will continue to be followed with sympathetic interest by the citizens of this country. Despite the existence of such international bodies as WHO, we can expect that for many years to come Indian and Pakistani workers in the fields of medicine and hygiene will turn naturally to the great institutions of Britain, such as the London School of Hygiene and Tropical Medicine and the Liverpool School of Tropical Medicine for friendly help and advice. Through the Empire Medical Advisory Bureau the B.M.A. may be able to assist visiting Indian doctors with personal problems—over one hundred of them made use of the Bureau during 1949.

INCREASING THE BRAIN'S BLOOD SUPPLY

It has recently been suggested that it is possible to revascularize the brain by surgical means, and, if it can be shown that a neurological disturbance which is due to a deficient blood supply can be reversed when the vascular deficit is made good, this is a suggestion worthy of study. Sciaroni[1] discusses four cases in which he had anastomosed the central portion of the divided common carotid artery to the peripheral end of the divided internal jugular vein and the peripheral segment of the

artery to the central segment of the vein. The operation may be performed on both sides, and Sciaroni claims that it benefited an epileptic and a hemiplegic. Beck, McKhann, and Belnap[2] established a fistula between the common carotid artery and internal jugular vein, at the same time ligating the vein on the cardiac side of the anastomosis. They have performed this operation on 11 patients, the maximum period of post-operative observation having been five months. It is claimed that in these cases intellectual function has improved and the frequency of epileptic attacks has been reduced. The technique of these operations is not difficult, but clear evidence that they do actually increase the cerebral blood flow is not presented, and the value of the operation could be better assessed if a longer period of post-operative study had been made.

On theoretical grounds the suggestion that the cerebral capillaries can be filled with arterial blood which enters them from the veins and leaves them through arterioles seems feasible, since in cases of advanced arterial degeneration the veins may remain structurally normal. The advantage of such a reversal of capillary blood flow is obvious, but there would seem to be doubt whether or not operation can bring it about. The communications between the tributaries of one internal jugular vein and those of the other (for instance, at the torcular Herophili) are numerous, as also are its communications with extracranial veins through the ophthalmic veins and various emissary channels. It would therefore seem possible that arterial blood entering an internal jugular vein may leak away into other venous channels, with the result that the corresponding cerebral hemisphere would be deprived of blood rather than receive an increased supply. The fact that in the reported cases proptosis did not arise suggests that this may in fact be so. Further, there is evidence that in the case of traumatic arteriovenous fistulae in the limbs arterial blood is short-circuited into the venous system so that the peripheral portion of the limb is relatively ischaemic. For this reason ligation of the main artery proximal to such a lesion carries the considerable danger of peripheral gangrene. It is, of course, true that in the case of congenital arteriovenous communications at the periphery of an extremity the affected limb is frequently larger, longer, and warmer than its normal fellow. This is due to the increased flow of blood to the extremity as a whole, but it is noteworthy that ulceration may develop at the periphery of the limb, and this must be regarded as the result of defective circulation.

The second problem which arises is how far it is possible to make good by restoring the circulation a deficit in nervous tissue due to vascular disease. In a case of hemiplegia due to a vascular lesion it will often be the case that in the minutes after the occurrence of the condition irreparable damage is done to the nervous tissue, and restoration of the blood supply to the affected area cannot restore its function. It is suggested that viable but non-functioning neurones may be present in such areas and that they will function again if the circulation becomes adequate. Some benefit from revascularization might be expected if the proportion of such viable neurones is high, but, if it is not, then restoration of the blood flow to the affected area is valueless. In mental retardation and epilepsy in infants the theoretical value of cerebral revascularization is less obvious. Arterial disease is not a factor in the aetiology of such states, and it is difficult to see how the blood flow delivered through the internal carotid arteries can be improved upon, even if revascularization of the cerebrum from the internal jugular veins can be proved to take place. Thus, if it can be demonstrated, for example by angiography, that such operations as have been described do in fact revascularize the brain, it will remain to be shown that the consequent improvement in circulation can reduce the functional deficit which ischaemia of neurones has produced.

[2] *Amer. J. Surg.*, 1948, **76**, 150.
[3] *J. Pediat.*, 1949, **35**, 317.

THE SURGEON AND THE PATIENT

Though no one has yet shown how "mind and body are interdependent," all medical men will agree with Professor Kennedy that they are. In his article, which appears at p. 396, he emphasizes what surgeons in the bustle of hospital life may sometimes forget—that patients awaiting or recovering from surgical operations feel fearful, hopeful, anxious, or calm about the outcome, and that their mental attitude influences their well-being. Perhaps the surgeon's training makes him less responsive to this doctrine than the physician, to whom psychosomatic medicine is now no novelty. Professor Kennedy also suggests that the average surgeon's temperament may account for the human approach sometimes being less evident in surgical wards than elsewhere. Whether that is so or not, the surgeon's long training on the cadaver and the unconscious body is apt to diminish his interest in the emotions that the patient suffers when awake. To the surgeon an operation may be one in a series of 100, to the patient one in a lifetime.

A serious illness makes a patient disquieted about his condition and prospects, yet "They don't tell you anything" is still a common complaint, and one that the surgeon or physician should remedy by taking care to dispel the patient's ignorance in terms that he can understand. The medical man needs some experience in choosing the right words for his explanation; "chronic," as Professor Kennedy points out, is misleading, for to some patients it means endless; "acute," too, may be misinterpreted as severe or even mortal. Again, a routine examination before operation may worry a patient if the doctor goes away without explaining that his intent expression was due to nothing more sinister than mental concentration. As

[1] *A Psychiatrist Looks at Tuberculosis*, N.A.P.T., London, 1949.

Dr. Wittkower[1] has put it: "Every doctor knows—but how often he forgets!—to what extent patients, if they are seriously ill, hang on his lips." Though his observations were on tuberculous patients, the mental attitudes to illness that Dr. Wittkower describes are common enough in every ward and of interest to all medical men. He points out that "chronic illness almost invariably mobilizes aggressiveness," which may tax severely the sympathy of an inexperienced man. The temptation to hurry on to the next case is great, but often enough it is just such patients that need most attention.

If mental tranquillity and confidence are important aids to the patient's well-being, some knowledge of his condition helps him also to co-operate with the surgeon and nursing staff after the operation. Patients are now got up much earlier than formerly and are expected to exert themselves in movements that they may believe impossible to perform in such an enfeebled condition. They may fear that the "stitches will burst" or the leg "give way," and need encouragement, explanation, and a sympathetic audience rather than a hurried injunction to carry out the great man's instructions.

Though surgeons acknowledge that rehabilitation begins at operation or before it, some have not been so quick to recognize the need for building up a firm relationship with the patient. Time is short and the operation is what the surgeon has spent so many years learning to perform skilfully, yet in some cases it plays a small part in the patient's recovery. Professor Kennedy's observations emphasize how hospital life, so commonplace to the surgeon, is upsetting and strange to the patient. An understanding of what his patients are thinking about—and the desire to find out—are as essential to the surgeon's equipment as the knowledge he has had to acquire in order to pass examinations.

THE CONTRACTION OF MUSCLES

An international discussion on the working of muscles, held lately by the Royal Society in London, has directed attention to the gap which exists between the quick and sensitive measurements of muscular contraction which can be made by the physicist and the theories of chemists, which so far have been only speculatively related to these measurements. Until this gap has been bridged it will be impossible that any generally accepted theory of muscular contraction should be developed. At a demonstration of physical methods in the biophysical laboratories of University College Professor A. V. Hill showed visually that it is possible to distinguish between "heat of activation," which is released at each stimulus during a series of individually recorded muscular twitches, "heat of shortening," which is directly proportional to the extent of shortening, and "heat of relaxation," which appears when a muscle relaxes, while still under load, after contraction. Professor Hill has discussed these effects in detail in a series of recently published papers.[1] One of his conclusions is that "heat of activation"—the most rapid release of heat at any stage in a muscular twitch—begins fractionally earlier in time than does physical movement. A still more recent discovery is that if a muscle is stimulated when not under load then the small initial extension which has previously been reported is replaced by a shortening.

In his introduction to the discussion proper Professor Hill underlined the fundamental difficulty that normal chemical methods were very slow and insensitive in face of the requirements posed by the muscle twitch. He illustrated this by pointing out that if the heat production in a single twitch were derived from the breakdown of creatine phosphate, then the amount of phosphate liberated would be in the neighbourhood of a few hundred-thousandths of a gramme. To detect such a quantity would be a formidable enough task: to resolve its appearance in times of the order of tenths or hundredths of a second was one of fantastic difficulty. Even in the very slow twitch of a toad's muscle recorded at 0° C. the state of full activity was reached within 30 to 40 milliseconds after a stimulus, and relaxation was already obvious at 0.2 to 0.4 second. There was no way of mitigating this difficulty except to improve the sensitivity and speed of chemical methods and to work with the slowest muscles at the lowest temperatures.

Professor Hill's observations had been circulated in advance to those taking part in the discussion, and Professor E. Lundsgaard (Denmark) had been stimulated by them to undertake certain new experiments which he described. He referred also to the demonstration by tracer methods that the phosphorus in adenosine triphosphate is freely and rapidly interchangeable with that in its environment. He had no doubt that this was speeded up in activity, but it had never been demonstrated. Dr. Dorothy Needham (Cambridge), also a biochemist, thought that one possible reaction—the reversible conversion of adenosine diphosphate into triphosphate—might just be followed within the required limits of time by the method of ultraviolet absorption. In a written communication Prof. W. T. Astbury (Leeds) discussed the practicability of a specification for *x*-ray measurement, which Professor Hill had also suggested. If exposures of a tenth of a second could be made at the same stage during each of 300 twitches—about the most which could be allowed—that would provide a total superimposed exposure of just 30 seconds. The question was whether that would be long enough for changes in structure to be determined. Professor Astbury thought it would be a difficult and expensive venture, and perhaps a gamble—but it could be done. An *x*-ray tube would have to be built that would deliver a very intense "flash" beam, triggered off by the contracting muscle itself, and the investigation would require a team of physicists and biologists working in close co-operation. At the moment he saw no prospect of carrying out such an experiment without special support and co-ordination, but it would be "a worthy project, without which further really substantial *x*-ray progress into the working details of the muscle machine is hardly possible." Others taking part in the discussion included Professor H. H. Weber (Tübingen), Professor M. Dubuisson (Liége), and Professor E. J. Conway (Dublin). In summing-up Professor J. T. Edsall (Harvard) stated that the object of the discussion was to achieve the type of stimulation to which Professor Lunsgaard had admitted; some of the contributions gave ground for the hope that an eventual solution of the outstanding problems might not be impossible.

[1] *Proc. roy. Soc. B.*, 1949, **136**, 195, 211, 220, 228, and 242.

MALARIA IN BORNEO

The island of Borneo is sparsely populated, and throughout the greater part of it malaria is hyperendemic, its prevalence constituting a grave hindrance to the economic and social development of the country. Thirty-four species of Anopheles have been recorded, and five of these—*A. umbrosus, sundaicus, minimus flavirostris, hyrcanus,* and *leucosphyrus* have been found infected with malaria parasites. *A. maculatus* has a reputation as a dangerous vector in Malaya, and because of this it has been assumed that it played an equally important part in the transmission of malaria in Borneo, though in fact this mosquito had never been found infected in that island. McArthur[1] has described in great detail the results of observations on mosquitoes carried out in the Tambunan District of North Borneo during the period 1939–42. At Jesselton, on the coast, the incidence of malaria was found to be negligible. On the Tambunan plain, 25 miles inland, at an elevation of 2,000 feet (600 m.), the disease was hyperendemic, but its intensity was much influenced by physical features, being least in the centre of the plain and greatest in the hill ravines, where nearly 100% of the inhabitants had enlarged spleens. Some of the least malarious localities were those in which larvae of *A. maculatus* were most abundant. The predominant malaria parasite was *P. falciparum, P. vivax* being next in frequency. *P. malariae* was less common, though in certain areas it was the most prevalent species.

Adult Anopheles were extremely difficult to find, an intensive search over a period of two years proving almost entirely negative. Cattle-sheds were non-existent, so that this type of resting place was not available. No significant results were obtained with traps in which the operator, lying beneath an inner net, acted as the bait. Jungle searching and traps in which animals were the bait were more successful, but the great majority of Anopheles captured were either *philippinensis* or *kochi*. At the end of two years 1,300 dissections had been performed with negative results, but suspicion began to be directed against *A. leucosphyrus*, the only species captured which had an apparent preference for human blood. This was confirmed by the results of a small series of precipitin tests on the blood found in the stomachs of mosquitoes. In 1914 Roper[2] had reported the finding of blood-engorged adults of this species inside mosquito nets in malarious coolie huts in Borneo; he also mentioned that several other observers had suspected it to be a carrier on epidemiological grounds, and that gut infections had been recorded by Dutch observers among specimens captured on the south and west coasts of the island. In order to obtain additional evidence McArthur offered payment to the natives for any adult mosquitoes brought in, and a prize of five dollars for each one found infected. This resulted in the capture of 716 Anopheles, including 574 *A. leucosphyrus*, most of the catch being taken from mosquito nets of the type having a slit down one side to allow easy entry. Of 2,715 mosquitoes dissected during 1940–1, 761 were *A. leucosphyrus*, of which 25 were infected (3.3%) and 18 found to have sporozoites in the salivary glands. Infections were encountered in no other species. McArthur concludes that *A. leucosphyrus* is the principal malaria carrier in Borneo. This species has been incriminated as a vector at Digboi in north-west Assam and in several localities in Borneo and Indo-China, and probably plays a much more important part in the transmission of malaria in Asia than has formerly been suspected. As measures of control, McArthur recommends the clearance of vegetation, preferably by burning, and the encouragement of cattle grazing.

[1] *Malaria in Borneo. An Account of the Work of the Malaria Research Department, North Borneo, 1939–42.* (A copy of this report has been presented by the author to the B.M.A. Library.)
[2] *Bull. ent. Res.*, 1914, **5**, pt. 2.

ELECTROPHRENIC RESPIRATION

Artificial respiration can be given either by manual manipulation of the patient, by intermittent positive pressure, or by an "iron lung." Recently Sarnhoff and his co-workers[1] have developed a new method which depends on intermittent stimulation of the phrenic nerve. In experiments on cats and dogs the nerve was exposed and a silver electrode applied, an indifferent electrode being placed anywhere on the skin. A Grass stimulator supplied faradic stimuli at a rate of 40 per minute. The current was fed through a rotating potentiometer which in the course of each respiratory cycle gradually increased the voltage to three volts and then gradually reduced it. This stimulus gives a slow contraction of the diaphragm resembling the normal movement. When the animals were anaesthetized to the point of respiratory arrest stimulation of one phrenic nerve was sufficient to maintain a normal tidal air and normal arterial oxygen and carbon-dioxide tensions. The tidal air could be regulated by reducing the peak voltage.

The method was tested[2] in a patient whose left phrenic nerve was crushed for severe chronic diaphragmatic flutter, an electrode being left on the right phrenic nerve. After operation, when the patient was conscious, the effect of artificial respiration by rhythmic stimulation of the right phrenic nerve was investigated. Spontaneous respiratory movements stopped during periods of stimulation, but the amount of air breathed each minute and the tidal air remained unchanged or even increased in volume. Although the ventilation of the left lung depended largely on the movements of the right diaphragm, there was no fall in arterial oxygen saturation; in fact oximeter studies showed an increase in arterial saturation during electrophrenic respiration. The electrode was left in place for five days before removal, during which time spontaneous diaphragmatic movements between periods of stimulation showed no reduction in amplitude. This was taken to indicate that there was no damage to the phrenic nerve by the stimulating electrode. Although the patient did not complain of pain and was able to sleep during electrophrenic respiration, he admitted, when closely questioned, that he had some discomfort in the right shoulder while the nerve was being stimulated. This new method of artificial respiration has the great advantage that the apparatus is less cumbersome than the iron lung. According to press reports in the U.S.A. it has already been used with success in bulbar poliomyelitis.[3]

[1] *Amer. J. Physiol.*, 1948. **155**, 1.
[2] *J. clin. Invest.* 1949, **28**, 124.
[3] *Time*, October 17, 1949, p. 38.

REFRESHER COURSE FOR GENERAL PRACTITIONERS

ACUTE AND CHRONIC SINUSITIS

BY

C. GILL-CAREY, F.R.C.S.

Surgeon, Royal National Throat, Nose, and Ear Hospital; Dean, Institute of Laryngology and Otology

During the past twenty years sinusitis has become a medical rather than a surgical disease. Increasing knowledge of the underlying pathology has indicated that the loosely applied term "sinusitis" covers two entirely different pathological conditions. The first, conveniently named suppurative sinusitis, is a disease primarily nasal, with or without secondary infective effects in other organs, and accounts for about 30% of all cases. The second is a general disturbance of the body, with associated changes in the nose and nasal sinuses, and is responsible for some 70% of cases. For the purposes of this article it will be named non-suppurative sinusitis.

The pathology of suppurative sinusitis is that of infection in general, with minor modifications due to its situation. Treatment of this type, provided it is planned with due regard to the anatomy, physiology, and pathology of the nose and nasal sinuses, is therefore followed by gratifying results. The pathology of non-suppurative sinusitis remains obscure. In the present state of our knowledge the majority of cases seem to fall into three groups: the allergic, the endocrine disturbances, and the dietary deficiencies, in that order of diminishing frequency.

Accuracy in diagnosis of the type of sinusitis in question is the keystone to successful treatment. This point cannot be over-stressed. Until recent times all cases of sinusitis were treated as for an infection. The end-results, in cases of non-suppurative sinusitis, have been poor. As these account for 70% of all cases, it is not surprising that there has arisen in both medical and lay circles a despondent and even a fearful state of mind regarding sinusitis and its treatment.

Applied Anatomy

Sinus disease is common in children. At birth all the sinuses are present, but with the exception of the maxillary (the size of which has been compared to a small pea) they are extremely small. By the age of 5 most of the sinuses have reached an appreciable size—the maxillary, for instance, has an average capacity of 5 c.cm. From this age onwards detailed examination (including *x*-ray films) will disclose that sinusitis, both infective and non-infective, is often present.

The complications of sinusitis are fortunately rare, for when they do occur they carry a grave risk of death. Infection of the orbit usually begins quietly as an orbital swelling, with or without constitutional symptoms. If expert treatment be delayed, meningitis, cavernous sinus thrombosis, or brain abscess may result. The two diagrams will serve as reminders of the applied anatomy.

Physio-pathology

The function of the nasal sinuses is uncertain. The suggestions that they act as resonating chambers for the voice or as a means of lightening the skull (Vesalius) seem most reasonable.

An account of nasal disease should rightly begin with a survey of nasal function. The main function of the nose is that of an air conditioner which delivers to the lungs a supply of air free from dust and bacteria, and never varying in temperature or humidity. The efficiency of the nasal machine is impaired by faulty design, by wear and tear from past battles with the environment and infection, and (often forgotten) by the effects of fatigue, anxiety, and indifferent food.

The mucous membrane of the respiratory portion of the nose and nasal sinuses consists of two layers:

(1) A surface epithelium of tall columnar cells bearing cilia, with supporting cells and goblet cells secreting mucus, all lying on a basement membrane.

(2) A deeper submucous layer or stroma, composed of connective tissue in which lie rich capillary loops, veins and arteries, lymphatics, and serous and mucus glands.

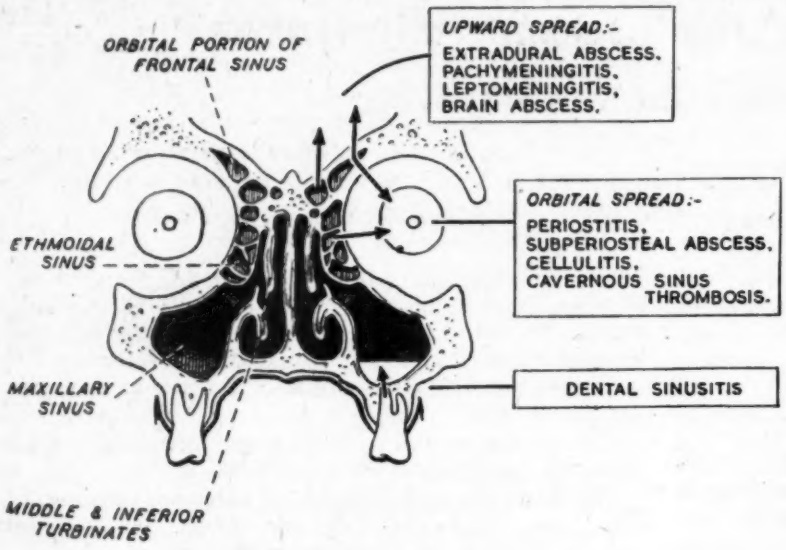
There are many minute openings in the basement membrane to permit the passage of cells and fluid between the surface and deeper layers of the mucous membrane.

In addition to the phagocytic defence mechanism found in all tissues to safeguard against invasion by foreign agents, the nasal and sinus mucous membrane has a defence peculiar to that part of the body—the mucociliary barrier. This deserves special mention, as it has an important bearing on treatment. The defence breaks down when the cilia stop beating or, as often happens in the nasal sinuses, the secretion is too viscid or too great in quantity to be moved. Ciliary activity continues unimpaired through a wide range of temperature, but drying of the epithelium rapidly causes cessation of movement. It therefore follows that ventilation of the nose itself has an important bearing on the efficiency of the mucociliary defence and on sinus drainage.

Normal nasal respiration exerts a suction effect which greatly assists the removal of secretion from within the sinuses. Water stops ciliary action and oil hinders it. In normal saline, however, vigorous movement continues for long periods. Normal saline is therefore the most suitable vehicle in which to dissolve drugs used in nasal treatment.

Cocaine in strengths above 2.5% and adrenaline in 1 in 1,000 dilution cause temporary paralysis. The advantages of this combination of the two drugs in local analgesia are well known, but repeated application of either for the purpose of vasoconstriction is undesirable. Menthol, thymol, camphor, and eucalyptus oil all inhibit ciliary action. Some sulphonamides are unsuitable owing to their high alkalinity; in powder form they increase the task of the cilia. Ephedrine in normal saline, in strengths up to 3%, and penicillin in strengths from 500 to 5,000 units per ml. do not interfere with ciliary activity when used for short periods. The repeated application of bland solutions such as normal saline produces pathological changes in the nasal mucosa of experimental animals. In practice, the habit of using vasoconstrictor drops is easily acquired, and some cases of vasomotor rhinitis are due solely to this daily irritation.

The essential pathology of non-suppurative sinusitis is oedema involving all layers of the mucous membrane.



Persistent oedema eventually leads to prolapse of the mucous membrane with the formation of polypi.

Diagnosis

In the majority of cases it is possible to differentiate between non-infective and infective sinusitis by clinical examination. Careful history-taking is of prime importance. There must, however, remain a percentage of cases which will tax the diagnostic ability of the most experienced rhinologist. In mixed types of sinusitis it is sometimes difficult, even after repeated examinations, to decide which of the two factors is the more important.

Non-suppurative Sinusitis

History.—The patient's description of himself as a sufferer from frequent summer or winter colds should be accepted with reservations. The cold may not necessarily be of infective origin. House-dust sensitivities are usually more severe in winter, and pollen sensitivity is worse during May and June. It is always wise to ask about other allergic disturbances such as migraine, urticaria, and asthma in the patient or his family. The onset of non-suppurative sinusitis is usually insidious, but one may be misled by the history of a sudden attack following swimming, influenza, or even the constant use of nose drops, which may act as the stimulus to start the allergic cycle.

Signs and Symptoms.—The typical case shows widespread pale oedema of the mucous membrane, polypi, and hypertrophy of the turbinates. Abundant secretion, usually colourless and sticky, is present in the nose and nasopharynx. It is rare to find a red mucous membrane in non-suppurative sinusitis, but this may occur during the acute stages of an allergic attack or when there is an added acute infection. Obstruction, discharge, sneezing, and itching are pronounced. Headaches are frequent. Some are due to pressure changes in the sinuses, others are migrainous. Asthmatic attacks and gastro-intestinal symptoms are common.

X-ray films show abnormalities in several sinuses, often on both sides of the nose. The lining membrane is in the main grossly and irregularly thickened. Both the mucous membrane and the bony walls lack definition.

The sinus secretions are sticky and present the appearance of mucus or mucopus, but on microscopical examination it is rare to find pus cells. Eosinophils, if found, point to the allergic variety of non-suppurative sinusitis. Cultures remain sterile or give a feeble growth of organisms of low virulence.

Suppurative Sinusitis

History.—There is usually a clear association with a severe upper respiratory infection, a severe cold, one of the infectious fevers, or a swimming-bath infection. About 15 to 20% of cases in this group are secondary to dental infection.

Signs and Symptoms.—One sinus or group of sinuses is usually involved, the maxillary most commonly. In the early stages nasal examination shows unilateral hyperaemia and swelling, with purulent discharge in that side. Later, the nasal signs are few and easily missed. Hyperaemia, with or without crusting, is localized to the region of the infected ostium. Signs of infection are often more obvious in the nasopharynx. Unilateral purulent or mucopurulent discharge or a dry glazed appearance on one side of the nasopharynx is suggestive of infective sinusitis. Local symptoms, except in the early stages, are surprisingly few. Headache is uncommon; discharge is scanty and often unnoticed. The occasional complaint of a bad smell is suggestive of sinus suppuration. Secondary symptoms are more prominent: deafness, repeated sore throats, and bronchitis are common complaints. Most frequently there is a state of vague unexplained ill-health accompanied by depression.

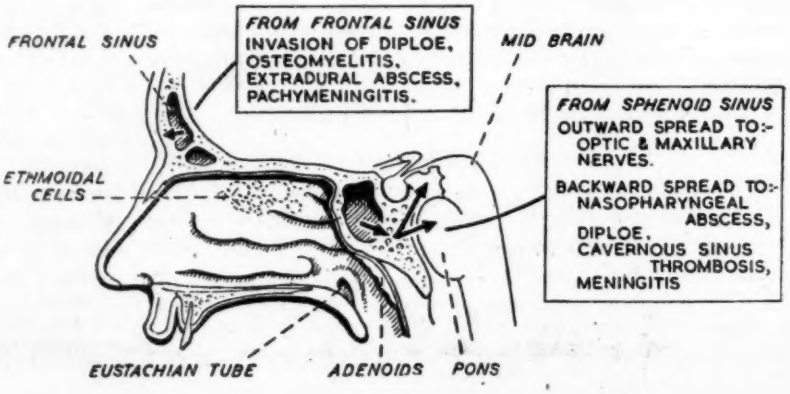
X-ray examination shows that the main changes are confined to one sinus. In the acute stage the *x*-ray appearances resemble those of non-suppurative sinusitis. Later, in the chronic stage, the shadow is dense and well defined.

Nasal and Sinus Secretions.—Pus cells and bacteria are found in quantity. Streptococci are the organisms most often cultured.

Treatment of Non-suppurative Sinusitis

After making a diagnosis of non-suppurative sinusitis one must go back to the history. What is behind it all? What acted as the trigger? Is the patient ill-fed, exhausted mentally, or suffering from some endocrine dysfunction? Has he acquired a sensitivity? What is the allergen?

In general, any treatment which succeeds in permanently relieving the oedema of the nasal and sinus mucous membranes will automatically relieve both the sinus



symptoms and the frequently associated mild secondary infection. Completely successful treatment is not so common that palliatives can be ignored. Of these, ephedrine (¼–½ gr. (16–32 mg.) t.d.s.) by mouth, administered with a barbiturate (e.g., phenobarbitone ¼–½ gr. t.d.s.) if side-effects are pronounced, is most useful in controlling oedema. Antihistamine drugs also control oedema, and give their best results in hay-fever subjects. The regular local application of vasoconstricting drugs for this purpose is an undesirable practice which may in time make the condition worse. Palliation can sometimes be obtained by traumatizing the nasal mucosa with caustics and ionization.

The details of treatment of the allergic state are beyond the scope of this article, but certain points must be mentioned. Treatment by desensitization is regarded by many as time-wasting and ineffectual; further, there is no doubt that injections have occasionally been followed by severe reactions, and that they have made some patients considerably worse. Against this must be set the striking results which sometimes follow this treatment. There are two theories of desensitization, the older method of giving increasing doses of the allergen, and the newer, as advocated by Hansel, of beginning with infinitely small doses and keeping these constant as soon as relief is obtained. He maintains that with his method the ill-effects of desensitization are avoided, and that the percentage of good results is increased. Complete avoidance of allergens is seldom possible, but there is no doubt that patients are helped when contact with their particular allergen is reduced. For example, the housewife with a dust allergy gains enormous benefit when she throws away her brushes and feather duster and buys a vacuum cleaner.

Endocrine disturbances play an important part in a small number of cases. The influence of the sex glands on the nose has long been recognized. Nasal and sinus symptoms may begin or become worse during puberty, menstruation, or pregnancy. Sinus symptoms of the non-suppurative variety, appearing for the first time at the menopause, usually respond without difficulty to treatment by ovarian hormone. Nasal obstruction and discharge figure among the symptoms of myxoedema. There are undoubtedly some individuals in whom minor derangements of the thyroid gland produce well-marked sinus and nasal symptoms.

Dietary deficiencies are regarded by some as a frequent cause of non-suppurative sinusitis. Satisfactory results are reported from vitamin B therapy, high doses of ascorbic acid, and the use of vitamin P. Crude liver extract is effective in some cases.

Surgical treatment is occasionally needed in non-suppurative sinusitis. Obstructing nasal polypi should be removed. Irrigation of sinuses to remove thick masses of secretion, whether infected or not, affords at least temporary relief from headaches.

True suppurative sinusitis can occur in patients with non-suppurative sinusitis, and should be treated by the usual methods for that condition. Radiation produces fibrosis with arteriosclerotic changes in the sub-mucosa and a consequent diminution of oedema; it is therefore of value as a palliative and is useful in delaying the return of polypi.

Treatment of Infective Sinusitis

Acute Infection: Early Stage.—The aim of treatment in this stage—the first seven to ten days—is to preserve the mucociliary barrier, to aid drainage from the sinuses, to relieve pain, and to diminish the virulence of the invading organisms. Trauma, even of a minor degree, such as is caused by antral puncture, is likely at this stage to spread infection, and should be avoided. Extra moisture should be supplied by steam inhalations unadulterated by antiseptics. The good effects of nasal breathing are maintained, and oedema is reduced by the local application of ephedrine, 0.5 to 3% in normal saline, or by giving the same drug by mouth. Should unwelcome side-effects, either local or general, occur with its use it is advisable to employ other vasoconstrictors like amphetamine by inhaler.

Most cases of acute sinusitis are mild and resolve spontaneously. Severe attacks with fever and pain should be treated energetically with both sulphonamides and penicillin (e.g., sulphadimidine 1.5 g. four-hourly for 2–3 days, then 1.0 g. four-hourly; penicillin 30,000 units three-hourly). Given in adequate doses in the early stage of infection these are extremely effective, hastening resolution and preventing complications.

Acute Infection: Later Stage.—Should symptoms continue unabated into the second or third week it is an indication that the sinus is not draining sufficiently. This is the time for sinus irrigation, and for this some degree of specialized training is required. One or two washings, by diluting and removing the products of infection, will usually allow the mucociliary barrier again to function and normal resolution to take place. Experimentally, short-wave diathermy has been shown to be the only method of raising the temperature within the sinuses. By reason of the local heat it stimulates the defence mechanism of the blood and of the connective tissue in the mucous membrane. It must be remembered, however, that short-wave diathermy causes a temporary increase in the swelling of the lining membrane. It therefore follows that short-wave diathermy must not be used until the sinus is draining freely and there are no signs of obstruction. When used at this stage of the disease it will hasten resolution.

It is well to keep in mind that there are some cases of sinusitis that will not get well whatever the method of treatment, and this leads to the problem of chronic sinusitis. This complication may take place quietly, and neither the patient nor the doctor may be aware of it. For this reason all cases of sinusitis should be re-examined a month after the subsidence of the acute attack. At the same time, contributory causes of the acute attack may be searched for—such as adenoids in children, septal deviations in adults, and a quiet dental infection. The doubtful case may be reviewed, and the possibility of a previously existing non-suppurative sinusitis ascertained by careful examination.

Chronic Suppurative Sinusitis

The mucous membrane of the sinuses has an amazing vitality. Even when chronic sinusitis has existed for a considerable time and the sinus is filled with foul pus the mucous membrane may yet recover and normal function be re-established by adequate drainage alone. It is now generally agreed that it is better to give the mucous membrane a chance of recovery before considering radical surgery.

The antrum is the sinus most prone to chronic suppuration, and therefore is the master sinus. Gravity drainage and aeration provided by an accessory opening near the floor of the antrum usually brings about resolution in secondarily infected neighbouring sinuses, such as the ethmoids, as well as in the antrum itself. Should this fail to occur, however, and the antrum recover alone, it will generally be found that the ostia of these sinuses are blocked by mechanical causes in the vicinity, such as polypi, a high septal deviation, or enlargement of the middle

turbinate. Removal of these obstacles will usually lead to resolution of infection. Treatment of chronic suppurative sinusitis along these lines, provided it is given enough time, will usually lead to resolution; radical surgery entailing stripping of the lining membrane is rarely necessary or desirable.

During the chronic stages of suppurative sinusitis, antibiotics and sulphonamides are rarely necessary or useful. They should, however, be used vigorously and in the same manner as for acute sinusitis when an acute exacerbation occurs in a patient with established chronic sinusitis. There is little advantage in incorporating either of the above drugs in irrigating fluids. Short-wave diathermy should be used for chronic sinusitis only when the sinus is unobstructed. Vaccine therapy is sometimes useful in the patient with a mild chronic infection without gross obstruction.

Diagrams by Miss Sylvia Treadgold

BIBLIOGRAPHY

Colson, Z. William (1948). *Laryngoscope*, **58**, 642.
Fenton, Ralph A., and Larsell, Olaf (1933). Ibid., **43**, 233.
Hansel, F. K. (1936). *Allergy of the Nose and Para-nasal Sinuses*. C. V. Mosley Co., St. Louis.
—— *et al.* (1948). *Laryngoscope*, **58**, 652
McMurray, John (1931). *Arch. Otolaryng., Chicago*, **14**, 581.
O'Malley, J. F. (1935). *J. Laryng.*, **50**, 389.
Roberts, Sam E. (1945). *Arch. Otolaryng., Chicago*, **42**, 198.

THE PAN-AMERICAN DOCTORS' CLUB

BY

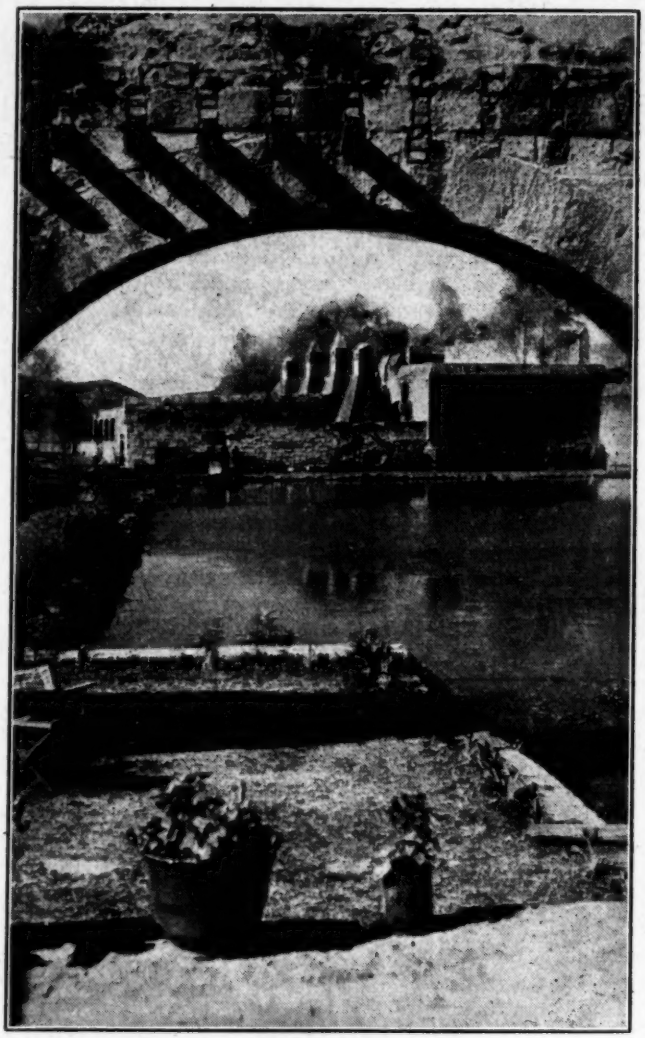
COLONEL P. T. ETHERTON

We are told that there is nothing new under the sun, but during a visit to Mexico I came across something that for me had a certain novelty. It was a country and week-end club for doctors, organized on a luxurious scale and situated about sixty miles from Mexico City. There is a widespread and growing interest in this well-run club: I came into contact with it through my friend Dr. Antonio Buch, who studied medicine at St. Mary's Hospital, London, and speaks English with an impeccable accent. He will be glad to introduce British doctors visiting Mexico to the club if they will write to me for his address.

The *Club Panamericano de Doctores* was started in 1946. The club-house is a well-built structure with housing capacity for 140 persons, and with fine views over the surrounding countryside. The place formerly belonged to a Mexican nobleman and has excellent kitchens, dining-room, lounge, up-to-date bedrooms and bathrooms, and a breakfast terrace which adds greatly to enjoyment of the early morning. Here the Mexican doctor, and any foreign visitor who has the luck to be a guest, can relax, meet his fellow medicos, and discuss in a delightful atmosphere the advancement of medical science, which, by the way, is receiving great attention in Mexico.

For the comforts and amenities of the club an all-in daily figure of 3 dollars 40 cents (United States currency) is charged. The food is varied and well cooked; pasteurized dairy products such as milk, cream, butter, and cheese are served. There is a model dairy, with cold-storage for meats and other farm and perishable products, while adjacent land is being developed to meet some of the club's food needs. Fruit, of course, is plentiful, and includes bananas, oranges, apricots, peaches, and grapes. Apart from garages, stabling is provided, for the Mexicans are brilliant and colourful riders and seem born to the saddle.

There is almost everything in this club: a model laundry, a processing plant, a section which deals with ailments that may afflict the visitor and which gives helpful advice.



A view from the veranda.

Visitors to foreign lands often fail to appreciate the numerous health safeguards which surround them at home but which are absent in countries less well advanced in matters of public health and sanitation. At the *Club de Doctores* it is quite unobtrusively brought to mind that continued good health depends upon constant personal vigilance and a knowledge of the sources of danger.

As already remarked, the Mexicans are paying great attention to medicine in all its branches, and several hospitals I visited could compare with any of their kind in the world. The Aztecs, who preceded the coming of the Spaniards—the founders of modern Mexico—in 1519, were a well-organized people who possessed hospitals and nursing-homes which were admired by Cortes and other Spanish leaders.

A large part of the population are Mexican Indians, who live in villages and constitute the agricultural class. Every effort is being made to educate these people, but the Mexican authorities, always sympathetic and indulgent and with a sense of proportion, have a hard task to eradicate old customs and beliefs touching medical knowledge. Yet some of the local remedies are outstanding; in remote country districts I came across Indians who have a cure for snake-bite, an antidote made from herbs, the composition of which is unknown to us. The majority of these people, rather than resort to present-day methods of treatment which are there for the asking, rely among other

things upon images called "miracles." These are hung on saints' effigies so that the saint will cure any specific disease. These images represent arms, legs, and so on, and hundreds of them are to be seen in churches, the people being encouraged by the local clergy to use them instead of consulting a doctor: they go to extremes in this pathetic belief, even crawling to church on hands and knees.

The people of the country districts are often scornful and suspicious of the moves of modern science, yet they never regard the stranger with any hostile feeling or as someone to get money from. They think little about what is going on outside, and concentrate solely on their own small circle of life and death. Despite their antipathy to present-day medicine and the twentieth-century doctor, they could tell me all about the seasons, the sun, the moon, and the stars, and the time to sow and to reap. They were *au courant* of the tangible and visible world around them.

The Mexican medical services are tackling these problems with commendable energy and perspicacity; in this respect the *Club de Doctores* plays a leading part as a centre where doctors and specialists can meet and exchange views and ideas and help forward the good work. I was told—an opinion I have long held—that atmosphere and environment are essential to the prosecution and development of new plans and ideas, and that is why the club, both internally and externally, is made attractive. The gardens are floral wonders and contain many of the flowers which have enriched the gardens of Europe, among others masses of dahlias and fuchsias. At the time of the Spanish conquest of Mexico a passion for flowers distinguished the natives; it is still a strong characteristic of the Mexicans to-day, and is evident in clubs and houses and on all festive occasions.

I can imagine nothing more restful than a long week-end in this club, with its comfort and outlook, admirably situated in a sylvan setting in this land of Mexico, where often but a step divides the desert from the sown and the vestiges of ancient days rise mutely out of the ground. Then, too, it is good for the doctor to get away from the roar and rattle of Mexico City, where motor-cars are innumerable and the noise is deafening; the Mexican driver spends most of his time at the wheel hooting for all he is worth, and one gets the impression that nothing but motor horns are left in the world.

Influenced by the magic of this club, life takes on a new and stimulating aspect. It was a happy idea of the founders to bring it into being—an example that might well be followed elsewhere.

NATIONAL FORMULARY, 1949

ANOTHER APPOINTED DAY

The Minister of Health has now agreed that the amendments to the *National Formulary* which will bring certain formulae into line with preparations under the same title or synonym in the *British Pharmaceutical Codex, 1949*, shall come into operation for National Health Service purposes on March 1. A first list of amendments was published in the *Journal* of January 14 (p. 120). Until June 1, however, chemists may dispense orders on E.C.10 prescription forms for these preparations either as formulated in the original *National Formulary, 1949*, or in the *B.P.C., 1949*. Amendment slips will be distributed through executive councils to each individual contractor as soon as the National Formulary Committee has published them, probably by the beginning of April.

Since for the majority of the preparations the amendment of the formula is confined to bringing the imperial quantities into line with the equivalent metric standards of the *Codex*, it is not expected that there will be any difference in price for the few medicaments which are normally bought from wholesale houses nor (with one exception, the Conspersi) for the medicaments usually dispensed extemporaneously. No special endorsements of prescriptions will be required, therefore, and a single appropriate tariff price for each medicament will be agreed with the chemists' representatives.

All the amendments published recently are designed to bring the *National Formulary* into line with the *British Pharmaceutical Codex, 1949*. If this had not been done a situation would have arisen in which certain preparations having the same title in both books would have had different formulae. An immediate consequence would have been that manufacturers and pharmacists would have been obliged to make, stock, and supply two preparations, one made to the formula of the *National Formulary, 1949*, and one to that of the *British Pharmaceutical Codex, 1949*, although in many instances the differences are very small.

The amendments may be roughly divided into two groups, those which consist simply of changes in the quantities of certain ingredients, and those in which the ingredients are changed in some way. The preparations in which there are changes in quality are almost all for external use. In the *British Pharmaceutical Codex, 1949*, these preparations are formulated on a simple percentage basis. In the corresponding formulae in the *National Formulary* the amounts calculated in imperial weights and measures for the quantities of preparations normally prescribed were often odd numbers of grains or minims and sometimes contained fractions. In some of the formulae these quantities were rounded off, with the result that discrepancies between the adjusted formulae and those in the *British Pharmaceutical Codex, 1949*, were produced. Some of these discrepancies are small, and where they are below 1% the formulae will not be amended. Other discrepancies are significant and amendment has been necessary. The calculated quantities in these amended formulae have been adjusted to the nearest half-grain or whole minim where this has been possible without introducing errors of more than 1%. Details of all these minor changes will, it is understood, be published from time to time in the *Pharmaceutical Journal*.

ORIGIN AND FUNCTIONS OF GLOBULINS AND ANTIBODIES

LECTURE BY PROFESSOR GRABAR

At the London School of Hygiene and Tropical Medicine on January 23, a lecture on the origin and functions of globulins and antibodies was delivered by Professor P. GRABAR, who holds the chair of microbial chemistry at the Pasteur Institute, Paris. Professor J. R. MARRACK presided.

Professor Grabar said that when the existence of antibodies was discovered it was natural to consider them as part of a special defence mechanism. Since that time a great deal of information had been gained in this field, and he had come to the conclusion that it was now necessary to change this idea of the function of antibodies and to put forward the hypothesis that the mechanism of antibody formation was a general mechanism which every organism used constantly and normally. Apparently the same mechanism could serve for defence and also, in some instances, produce harmful effects, such as anaphylaxis and allergy.

The antibodies were substances—globulins—which appeared in the circulation and reacted specifically with antigen. In general they were better defined by their reactions or their function than by their nature. Most of the workers on the subject since Metchnikoff had supposed that antibodies were synthesized in the cells, but from time to time antibodies were spoken of as globulins which were modified by antigen. "Antibodies" had been produced *in vitro*, but in fact these *in vitro* globulins did not react specifically, their reaction resembling much more closely that of dyes and proteins rather than that of antibody and antigen. That the hypothesis of extracellular

formation of antibodies was not valid was demonstrated by the fact that antibodies, before their appearance in the blood, could be detected in the tissues—that is, in cells. In some cases antibodies never even appeared in the circulation.

Two theories of antibody formation in recent years had arisen. Scandinavian workers had propounded the theory of the formation of antibodies, and globulins in general, by plasma cells. They had shown that in cases where hyperglobulinaemia occurred the plasma cells increased, and there was a parallelism between the quantity of globulins in the serum and the increase of plasma cells. Attempts were made to determine whether individuals who easily produced large quantities of globulins could produce also large quantities of antibodies, but this proved not to be the case.

Arguments in favour of the lymphocytic origin of antibodies had been presented mainly by American workers. Experiments had shown that extracts of lymphoid tissue or lymphocytic suspensions contained more antibodies than blood and lymph. Some authors had asserted that it was the lymphocytes themselves which were synthesizing antibodies. There had been many attempts to reproduce some of these experiments with lymphocytes, but most of the recent publications on this subject reported negative results.

It might be asked why so many different results were obtained by different authors. He could only emphasize the fact that in these various experiments most of the conditions had been very different as between one author and another. Not only were the species of experimental animals different, but also the techniques and the timing. All that could be said was that here again there was a parallelism between the apparent increase in antibodies and a fall in the number of lymphocytes.

Opposing Theories

Probably the capacity to produce antibodies was not limited to a single kind of cell. It was useful, however, to distinguish between two possibilities, the secretion of antibodies by living cells and their liberation through lysis of other cells. Very little was known about the exact origin of antibodies and globulins, and even less about the methods of formation of these substances.

So far, Professor Grabar said, he had spoken mainly of "antibodies"; but it was known that antibodies were globulins, and many workers had obtained solutions of pure antibodies which had all the properties of that enormous group of proteins which went by the name of globulins. Comparing the different characteristics of antibodies and globulins, no essential difference was found in, for example, amino-acid composition or physical properties.

When the first of a series of subcutaneous injections of an antigen was given to an animal, antibodies would form in the local lymph nodes, these antibodies having the properties of γ-globulins. After further injections of larger doses, these lymph nodes would be overwhelmed and some other organs would come into play, a different kind of antibody, for example, γ_2-globulin, being formed.

Experiments had shown that the properties of these antibodies were not markedly different from those of the normal globulins. It was generally admitted that antibodies and globulins were synthesized in the same way. He had tried to discover whether it was possible to separate the globulins produced by different kinds of cells and test whether they had different properties, but so far the experimental evidence was insufficient to justify any conclusion.

Any healthy animal must during its lifetime have been in contact with numerous antigens—infections, dusts, and so forth—and the serum of such an animal would contain many antibodies. All serum must contain unknown quantities of antibodies directed against antigens of which also practically nothing was known. The function of antibodies was said to be preventive, but very little was known about it. Then, too, the part played by globulins had been insufficiently studied.

In normal serum there were globulins which combined with different substances—hormones, glycogen, degradation products, and so on—and a certain degree of specificity seemed to characterize these reactions. It seemed to him that in view of all these findings it was difficult to claim that the formation of antibodies was due to a special defence mechanism. It was more simple and logical to suppose that it was a normal physiological mechanism of adaptive synthesis.

ASSOCIATION OF CLINICAL PATHOLOGISTS

MEETING AT BRIGHTON

The Association of Clinical Pathologists held its 43rd scientific meeting in the Royal Pavilion, Brighton, under the presidency of Dr. Norah Schuster, on January 26, 27, and 28.

First Session

Dr. J. Ungar (Greenford) compared the levels of penicillin in blood and inflamed tissues, and showed that after a single intramuscular injection penicillin could be detected in the tissue exudates for considerably longer periods than in the blood. This selective accumulation of penicillin in exudates was one of the most important factors responsible for the therapeutic effects of single massive doses and justified the use of this method.

Professor Robert Cruickshank (London) referred to the newer antibiotics which could be given orally. He deplored "blunderbuss" therapy, and suggested that intelligent cooperation with the bacteriologist would nearly always indicate which drug should be used. In infections with resistant staphylococci, the resistance might be only relative, and larger doses given more frequently might still be effective. Laboratory tests with chloramphenicol were easy, but aureomycin was more difficult to handle. It was unstable and no satisfactory methods were yet available for routine work.

Dr. A. Macdonald (Liverpool) reviewed the various laboratory procedures used in the diagnosis of toxoplasmosis. The complement fixation test was probably the most convenient for the ordinary laboratory. Sabin and Feldman's test for cytoplasm-modifying antibody was extremely sensitive but required the use of living parasites. The soluble egg antigen used for complement fixation tests maintained its potency if kept in the frozen state. In Liverpool they had found good general agreement between the results of different types of test. Examinations of maternal and cord blood showed that transference of maternal antibody occurred, so that a serological diagnosis had to be made with caution in very young infants. Dr. Macdonald also discussed his serological findings in children. While he had obtained evidence that infection with toxoplasma was not so rare as had been thought, it was as well to remember that toxoplasmosis was only one of a number of conditions which could produce very similar clinical manifestations.

Dr. Stewart Smith (Exeter) discussed pulmonary tuberculosis as a necropsy hazard. He described several cases within his personal experience over the last 25 years. There was much evidence that fresh post-mortem tissue was a ready source of tubercle bacilli which might affect post-mortem attendants, medical students, and others. For prophylaxis he stressed routine Mantoux tests and periodical *x*-ray examinations, careful consideration of the hygiene of the post-mortem room, and limiting the number of necropsies done on cases of proved tuberculosis, which he thought should be scheduled as an industrial disease. Professor Pulvertaft suggested that ultraviolet light should be used in addition for its bactericidal effects and that the air should be ozonized. Dr. Robb Smith said that adequate ventilation, the free use of lysol, adequate sterilizers, and the wearing of masks would also help to limit the incidence of tuberculous infection of this type.

Haematological Studies

Dr. A. Richardson-Jones (Portsmouth), at the opening of the Friday session, described his experiences with dextran as a potentiator of incomplete anti-Rh antibodies. This substance did possess a potentiating action, but in the state in which it was commercially available it was unsatisfactory for routine

laboratory use. It caused gross rouleaux formation of the test cells and it failed to potentiate all incomplete antibodies. He outlined the factors which contributed to rouleaux formation with dextran and indicated how they might be controlled. In this respect emphasis was laid on the age of the test cell and the resistance to rouleaux formation of unwashed cells.

Drs. C. D. Anderson and G. B. Roberts (Glasgow) described a case of monocytic leukaemia in a young girl with a typical leukaemic blood picture and a highly cellular leukaemic marrow. After treatment with urethane she developed a staphylococcal pneumonia, which was successfully treated with penicillin; after this no abnormal cells were found in the peripheral blood and the total marrow picture returned to normal. Some weeks later numerous chloromata appeared and the patient died. At necropsy there was no evidence of diffuse leukaemia, but numerous chloromata were found.

Professor D. F. Cappell and Dr. J. R. Anderson (Glasgow) presented a case of megalocytic anaemia with hyperplastic marrow of megaloblastic type in a girl of 17. The patient died in spite of treatment, and at the necropsy the ileum showed a severe inflammatory lesion which in its mid-portion was partially necrotic, with a thick adherent fibrinous membrane. It was subsequently found that the girl was in the habit of sucking naphthalene moth-balls.

Dr. A. I. Spriggs (Oxford) described the technique of making thin quick-drying smears from pleural or peritoneal effusions, and showed numerous colour photomicrographs. Of 30 malignant effusions, 20 contained recognizable malignant cells—this from a total of 255 fluids examined.

Professor Maclagan and Miss Barbara Lunnon (London) gave an account of their results with the zinc sulphate turbidity test, which had been correlated with the serum globulin level and with other flocculation tests in 100 cases in which the diagnosis was reasonably certain on clinical grounds. They found a less close correlation with serum globulin than that described by Kunkel but a very close correlation with the serum colloidal gold test. The zinc sulphate test was roughly correlated with the thymol test, but on the other hand it was more likely to give positive results in non-hepatic conditions. The thymol test appeared to be more sensitive in cases of acute hepatitis and gave occasional false positive results in cases of lipaemia. While the zinc sulphate and thymol tests were often in agreement, in certain cases useful information was sometimes obtained only by one of these tests. Therefore for diagnostic purposes the best results would be obtained by combining the two tests.

Drs. Bundock and Cumings (London) compared three methods of performing the Lange colloidal gold test with special reference to the diagnosis of neurosyphilis.

Dr. C. Dent (London) outlined the technique and scope of paper partition chromatography. Amino-acids could be demonstrated by this technique and provisional identification made from the position they had taken along the strip. A more accurate identification could be obtained if large squares (18 × 22 in., 45 × 55 cm.) of filter paper were used, two solvents being successively soaked along the paper at right angles to each other. He then described a rapid method, using smaller squares, which he thought would be more suitable for use in pathological laboratory practice.

Adrenal Cortical Function

Dr. Prunty (London) discussed the physiology of the adrenal cortex. The steroids encountered in the body as a result of adrenal cortical activity could be classified, partly on a chemical and partly on a functional basis, into three groups: the 11-oxygenated and desoxycorticosterone-like C_{21} steroids and C_{19} steroids. Methods of assessing high or low endogenous levels of these steroids were classified into those dependent upon measuring secondary metabolic alterations and tissue responses in the body, and those dependent upon measurement of urinary excretory products.

The application of these methods under "resting conditions" could be used for the evaluation of the spontaneous activity of the adrenal cortex. By stimulation of the system with adrenaline or ACTH the capacity of the adrenal and of the pituitary to respond could be evaluated. This was particularly useful in differentiating primary from secondary adrenal cortical failure, and in studying the capacity of the adrenal to respond to continued stimulation by ACTH, as for instance in recent problems connected with the therapeutic use of ACTH in the collagen diseases. The effects of ACTH in the normal individual in lowering the blood lymphocytes and eosinophils were maximal four hours after the injection. The increase observed in polymorphonuclears was thought to be a less specific action.

Professor G. W. Pickering (London) opened a discussion on the aetiology of malignant hypertension, and summarized some recent experimental findings. He also discussed the present position of renin, rediscovered in 1936, and the part it played in the production of hypertension.

Dr. Dorothy Russell (London) then described the vascular lesions in benign and malignant hypertension and demonstrated, in the benign form, the arteriolar changes which were non-fibrinoid, and the concentric fatty changes which could be shown in the arterioles by frozen section techniques. In malignant hypertension the typical medial hypertrophy, the reduplication of elastic tissue (elastosis), and the severe fibrinoid changes could, she suggested, be seen in other organs, such as the pancreas and the pons. She mentioned the explosive nature of the necrotizing arteritis, the escape of fibrinoid material into the perivascular spaces, and the resulting endarteritis fibrosa which was typical of malignant hypertension. Many cases were of mixed aetiology, malignant hypertension being superimposed upon the benign lesion.

Dr. C. W. Taylor (Birmingham) reviewed the findings in a fatal case of maternal embolism due to amniotic fluid and stressed the importance of examination of the lungs of patients dying during or soon after delivery, apparently from obstetric shock.

Dr. N. H. Ashton (London) demonstrated how the retina could be examined macroscopically and microscopically after mounting it in a glass sphere the same size as the sclera. He also showed neoprene casts of Schlemm's canal and its branches, which were here demonstrated for the first time. He concluded with an account of the examination of the aqueous humour by puncture with a special needle of the anterior chamber and withdrawal of a few drops for any special investigation.

Dr. K. S. Thompson (Birmingham) provoked some discussion on the problems of "adamantinoma" or squamous-cell carcinoma of the long bones, asserting that this was a primary tumour of bone. Other speakers expressed the view that the most careful search was required to identify minute primary lesions.

The meeting closed with a symposium on the reconstruction of human remains. This was opened by Professor J. D. Boyd (London), from the anatomist's point of view, and continued by Drs. Keith Simpson, R. D. Teare (London), F. D. M. Hocking (Truro), and D. E. Price (Barnsley). The importance of measurements, reconstruction, identification by finger-prints, dental work, and diseased organs were stressed.

GENERAL ELECTION

To the lists of doctors standing for Parliament already published (*Journal*, January 21, p. 178, and February 4, p. 300) there should be added the following:

ARTHUR BROWN, Wolverhampton North-East, Liberal. (1933).
General practitioner. War service in R.A.M.C., 1941–6.

HAROLD BASIL HOULDSWORTH, Gloucestershire West, Liberal. (1946).
Captain, R.A.M.C. Formerly senior resident anaesthetist, General Infirmary at Leeds.

OWEN VAUGHAN JONES, Neath Division, Glamorganshire, Liberal. (1927).
General practitioner, Bangor. Member of Caernarvonshire County Council. Member of executive committee of the Welsh Liberal Party.

HAROLD TUTT KAY, Bristol South, Liberal. (1945).
Flight Lieutenant, R.A.F.V.R. Formerly on staff of Odstock Hospital, Salisbury.

Reports of Societies

PREMATURITY

The first annual joint meeting of the Manchester and Liverpool Paediatric Clubs was held at the Liverpool Medical Institution on January 6 with Miss ISABELLA FORSHALL (Liverpool) in the chair.

Professor W. I. C. MORRIS (Manchester) opened the discussion with an account of the causes and prevention of prematurity, approaching the subject from the point of view of clinical recollection of individual cases of premature labour, generalized statistical evidence, and principles of management which were of value in the prevention or in the reduction of the hazards of prematurity. So far as personal clinical recollection was concerned, cases could be classified into those in which premature labour had occurred spontaneously and those in which it had been induced by the obstetrician. The toxaemias of pregnancy, the various types of antepartum haemorrhage, plural pregnancy, and hydramnios constituted the most generally recognizable features, but in some 40% of cases of prematurity no definite cause could be elicited. The importance of malnutrition as an associated factor, if not the primary aetiological one, required stressing. The prophylaxis of prematurity was a matter for the widest sociological study. The provision of many more antenatal beds was necessary to enable obstetricians to institute treatment at the onset of the toxaemias of pregnancy and to allow of study of those conditions which appeared to predispose to prematurity. Not all the beds need be provided in hospitals; antenatal rest homes would be particularly valuable.

Dr. J. D. HAY (Liverpool) discussed high protein diets for the premature infant. After reviewing previous work on this subject he described his experience at Mill Road Hospital, where three groups, each of 15 premature infants, had been studied. Each group received the same routine care and all infants were fed with expressed breast milk (E.B.M.) until breast-feeding was established. "Hepovite" was added to E.B.M. (18 gr. to the oz.: 4.2 g. per 100 ml.) in Group 1 so as to give an additional 22% amino-acid content. Group 2 received an additional 4.4% "dextrimaltose" and Group 3 E.B.M. alone. Observations were made of the weight gains, the total plasma protein levels, and the haemoglobin levels. The results showed that the addition of "hepovite" had no influence on the rate of weight gain. Some rise in plasma protein levels occurred during the first few weeks when maximum doses of "hepovite" were given, but these levels were not maintained, and the haemoglobin levels in the three groups were similar.

Dr. SYLVIA K. GUTHRIE (Manchester) reviewed 280 premature babies admitted in the first two weeks of life to the Duchess of York Babies' Hospital between January, 1944, and September, 1949. The annual statistics for this period showed a fall in the mortality rate in 1947 and 1948 and a slight rise in 1949, which corresponded to an increase in the number of deaths within 48 hours of admission. In spite of this rise in 1949 there was a marked fall in the percentage of deaths due to infections. This fall coincided with the transfer of infants from the old wards to a new unit with cubicles. Dr. Guthrie concluded that the decrease in infections was due to isolation in cubicles and to improved ward-cleaning facilities.

Dr. A. E. MCCANDLESS (Liverpool) stressed the value of *x*-ray films of the abdomen in the diagnosis of intestinal obstruction in the newborn. It was known that gas was present in the stomach immediately after birth and that within the first hour the proximal portion of small bowel was outlined. At the third hour the colon could be visualized, and by the eighth hour gas could be seen in the pelvis. In Liverpool an investigation was being undertaken to determine the rate of passage of gas through the bowel of premature infants. Preliminary observations suggested that this was similar to that in full-term infants. In congenital intestinal obstruction, arrest of the passage of gas could be seen in the film. This was a safe procedure compared with a barium meal, which involved the risk of aspiration, and it should be possible to diagnose congenital intestinal obstruction in the early hours of life.

Dr. P. D. Moss (Liverpool) described an apparent periosteal reaction in the long bones of premature infants. So far 63 infants had been investigated, and the bone changes had been shown radiologically in one or more bones in 26 cases. Syphilis was excluded. After a review of the work of Malmberg, Davidson, and Merritt, and of Glaser, Dr. Moss concluded that the true explanation had not yet been given. The work was being continued, and it was hoped to obtain information from post-mortem specimens.

Nova et Vetera

THE OSLER CLUB

A meeting of the Osler Club, held at the house of the Medical Society of London on January 27, was devoted to the history of dermatology, with special reference to Paul Gerson Unna, the centenary of whose birth occurs later this year.

Dr. R. M. B. MacKenna said the Edwin Smith and Ebers papyri both included descriptions of skin diseases and their treatment. The Hippocratic writings had contributed much to the modern vocabulary of dermatology, and the works of Aristotle, Galen, and Celsus also reflected a considerable experience in the diagnosis and treatment of skin affections. Bonomo in 1687 gave the first modern description of *Sarcoptes scabiei*, showing it to be the cause of scabies. In the next century Astruc could be regarded as the first histopathologist, Ramazzini had contributed his classical work on occupational dermatoses, and Daniel Turner, the founder of British dermatology, had published his *De Morbis Cutaneis*. The years 1750–1825 were a period of system-building.

Modern dermatology was ushered in by Robert Willan, who presented his classification of skin diseases to the Medical Society of London in 1785. Willan, regarded by some as the real founder of dermatology in Britain, despite the prior claim of Turner, made accurate observations and comparisons. With his disciple Bateman he had a profound influence on his specialty. In France dermatology owed much to the work of Alibert, Biett, Cazenave, and Bazin.

The discovery of a fungus as the cause of favus by Schönlein in 1839 linked mycology with dermatology for the first time. By 1875 the German dermatologists were pre-eminent, and about this time Unna began his study of the subject under Auspitz. In 1881 he founded a private clinic near Hamburg. He developed a number of differential stains and therapeutic agents and devoted much time to the study of the histology of skin, turning to its histopathology in 1889. He was a prolific writer, and in 1893, when the New Sydenham Society included several of his works in its *Selected Monographs on Dermatology*, it was possible to list the following papers by Unna: anatomical and physiological, 17; pathological, 47; therapeutic, 57; histological, 27; miscellaneous, 12. Unna was then 43 years old. About 1882–3 he introduced the zinc-gelatin paste with which his name was still associated. In 1894 his monumental *Histopathologie der Hautkrankheiten* appeared. It was translated into English by Sir Norman Walker two years later. Unna's efforts to place the aetiology of many skin diseases on a bacteriological basis were less successful. At the founding of the University of Hamburg in 1919 Unna was given the chair of dermatology. He died on January 29, 1929.

Unna's best work was carried out before 1900, but it had a profound effect on dermatology. More than any other person he was responsible for the development of the American school, and, despite the work of English and Scottish dermatologists, Britain was at last turning to follow his example. The future of dermatology lay in the hands of the biochemists; clinicians would again have to follow Unna, who took dermatology out of the clinic and into the laboratory.

Dr. E. Lipman Cohen and Dr. Brian Russell contributed brief papers on the terminology of leprosy and psoriasis, and Dr. A. C. Roxburgh concluded the proceedings with an account of some amusing experiences in the dermatological department of St. Bartholomew's Hospital.

Correspondence

Fifty Years of Medicine

SIR,—Like Mr. Victor Bonney (February 4, p. 303), I, and every gynaecologist who has discussed the matter with me, regret that the review of fifty years' progress in our branch was restricted to one part of it. Those of us who have been privileged to see and to take part in the advances this half-century are fully aware that, important as are the advances in obstetrics, they are at least equalled by those in gynaecology.

I do not know whether the Editor deliberately divided the subject and intended that gynaecology should be dealt with by another pen. As it stands it is rather like a description of Hamlet without any mention of the Prince. Much as we should have appreciated the subject being dealt with as a whole, it was better to omit it than to describe gynaecology as a mere branch of general surgery, which I gather would be Mr. Bonney's wish.

This, however, is an old controversy, happily laid at rest by the foundation of the Royal College of Obstetricians and Gynaecologists, one of the main reasons for which is the indivisibility of obstetrics and gynaecology.—I am, etc.,

Manchester. WILLIAM FLETCHER SHAW.

SIR,—I feel I must write and say how very much I agree with everything that Mr. Victor Bonney says in his letter (February 4, p. 303). Everyone will agree that your "Fifty Years of Medicine" (January 7, 1950) was an extremely good publication, and you have had many letters expressing this view. But to leave gynaecology out of it altogether was surely a great mistake. I endorse every word that Victor Bonney says in his letter, and I would further say this (which he would not say himself), that most of the great advances that have been made in gynaecological surgery during the past fifty years, or very many of them, are due to Bonney himself, and he was the most brilliant and dexterous operator that one could wish to see. No wonder he is sad.—I am, etc.,

Nottingham. R. G. HOGARTH.

SIR,—May I make one comment on Mr. Victor Bonney's letter (February 4, p. 303) in which he regrets the fact that obstetrics and gynaecology no longer form part of general surgery. Since the period when this view was generally held great changes have taken place, and while we admire the gynaecologist's skill in dealing with the surgical aspects of these subjects future advance is not likely to be mainly on surgical lines. Most of the unsolved problems peculiar to obstetrics and gynaecology are endocrine in nature, and will be solved by a medical rather than by a surgical approach. Indeed, we may sincerely hope that in the future the gynaecologist will regard himself as at least as much a physician as a surgeon.—I am, etc.,

Reading. H. S. LE MARQUAND.

SIR,—In congratulating the Editor and the contributors on the issue "Fifty Years of Medicine" (January 7), pioneers in artificial pneumothorax therapy will regret the omission of this important advance in phthisis treatment. One of my first observations on pneumothorax therapy (supported by that of an unbiased chief clinician of a large tuberculosis authority) was that opinion was unanimous that in well-selected cases this treatment was the most important advance during the last ten years.[1] Similar views were expressed about that time at the Royal Society of Medicine by the late Sir Kingston Fowler, a doyen of the profession.

Any doubt about the efficacy of the method was set at rest at the National Association for the Prevention of Tuberculosis Conference held in Leeds in May, 1920, when various pioneers of the treatment in the country pooled their experience and established a national lead. Dr. de Carle Woodcock, chief physician of the Leeds tuberculosis service, who introduced the treatment in Leeds in 1912, was the president of the conference. The previous year Leeds University accepted the first clinical thesis on artificial pneumothorax treatment for the degree of M.D. Cambridge also conferred the degree on the late Dr. Parry Morgan, the pathologist, on his study of the mechanics of treatment. In my thesis I quoted Dr. Claud Lillingston's personal experience of the treatment he underwent as a student in Norway in 1909, and mentioned that he performed the first induction with Dr. Vere Pearson in 1911 at Mundesley Sanatorium.

The first Medical Research Council report on artificial pneumothorax treatment was published in 1922, embodying the practical experience of sixteen contributors, some of whom took part in the Leeds conference. Compiled by Sir Arthur McNalty and the late Dr. L. S. T. Burrell, the report confirmed the use and importance of the method as an advance of the century. The fact that the collapse therapy paved the way for later bolder methods of surgery justifies the claim. Of the large number of cases treated in Leeds, some are still alive after three decades. William Ewart's statement[2] was prophetic:

"Forlanini's non-bacillary, mechanical cure was a singular instance of a method arising *d'emblée*, the offspring of a master thought, in full panoply and ready for immediate action, but too heroic, too magnificent for practical tactics, fraught with limiting risks greater than have yet been registered, and therefore bound to pass away as ineligible for the universal cure, yet imperishable in its teachings, which I venture to believe contain that cure."

—I am, etc.,

Leeds. Z. P. FERNANDEZ.

REFERENCES

[1] *Brit. J. Tuberc.*, 1921, **15**, 165.
[2] *Lancet*, 1913, **1**, 1417.

Anticoagulant Therapy

SIR,—The inconsistency which Dr. G. A. James mentions in his letter (January 28, p. 248) does not in fact exist. In the article by Dr. G. Anastasopoulos and myself to which he refers (December 31, 1949, p. 1492) we stated that the effects of alimentary lipaemia in patients treated with dicoumarol "varied according to the time after the start of dicoumarol treatment when the test was done and also according to the degree to which the prothrombin level had been depressed by the treatment." Accordingly the effect of haemolysis in shortening the accelerated clotting time with venom during treatment with dicoumarol will vary and will be absent only when the level of lipoid factor in the plasma is optimal. I am not quite sure what Dr. James means when he states that his patients were "fully under the influence of dicoumarol"; surely the effects of dicoumarol vary during the course of treatment and from patient to patient.

Lastly, I find it difficult to understand why Dr. James wrote in his original article (*Journal of Clinical Pathology*, 1949, **2**. 45) that he shook the tubes well if what he really meant was "inversion." Does this mean that if Dr. James reads that a man shakes with fright, he visualizes him standing on his head?—I am, etc.,

Aberdeen. HAROLD W. FULLERTON.

Analgesia in Childbirth

SIR,—Since pethidine is undoubtedly one of the most useful obstetric analgesic agents that we have at present it is important that no one should gain the impression that it is as completely harmless as Dr. F. Wrigley suggests (February 4, p. 306). Clement Smith[1] remarks of pethidine that "obstetricians in one large clinic have now abandoned it entirely, since, on extended trial, indubitable and frequent respiratory depression has been noted in the infants." He makes no reference to dosage. The fact is that the drug will give rise to alarm only if misused, and will be misused only if its limitations are not clearly understood.

The most generally useful single dose of pethidine is 150 mg. This seems entirely harmless to a normal full-time baby, but it does produce a slight, measurable effect on the establishment of breathing. This effect is maximal 1 to 1½ hours after the mother received the drug intramuscularly, and wears off in about 8 to 10 hours. A total of 250 mg. pethidine (in two doses) may safely be given in the last few hours before delivery. The babies seldom give anxiety, though few behave as babies do who have had no drug. Larger amounts cause

trouble: when, for example, 350 mg. are given in the last six hours, half the babies may be expected to be slow to breathe, some to a serious extent. When the mother has received 250 mg. eight or nine hours must elapse after the first dose before another one is given. Under this condition pethidine can be continued for several days if necessary. (Fuller details, the result of observations made at University College Hospital, are being prepared for publication, but these few facts seem fairly certain.) It may be noted that by one method of measuring respiratory depression in the human adult investigation shows that 100 mg. of pethidine is as effective as 10 mg. (gr. ⅙) of morphine.[2]

Pethidine does also affect uterine contractions: for example, the interval between them is temporarily lengthened, a phenomenon which is very simply confirmed by resting a hand on the abdomen. It can also be recorded graphically by a tocometer. This effect does not slow a labour which is well established. Indeed, by the other effects of the drug progress seems to be hastened. But pethidine may inhibit contractions which are very weak and will delay labour if given too early.

Physeptone, also mentioned by Dr. Wrigley in the quotation from Dr. C. Langton Hewer (December 31, 1949, p. 1521), is a different story. When given in amounts sufficient to produce relief comparable to that produced by pethidine its effect on the baby may be dangerous.[3]—I am, etc.,

London, W.C.1. SHILA G. RANSOM.

REFERENCES

1 *Recent Advances in Pediatrics*, 1948, vol. 3, London.
2 Prescott, F., Ransom, S., Thorp, R. H., and Wilson, A., *Lancet*, 1949, **1**, 340.
3 —— —— Ibid., 1947, **2**, 501.

Anaesthesia for Fenestration Operation

SIR,—In view of the widespread interest in the fenestration operation for deafness, the increasing number of otologists now performing it, and, therefore, the increasing number of anaesthetists called upon to anaesthetize for this procedure, it may be of use, if only to provoke discussion, to put on record the methods of anaesthesia used for all Mr. C. A. Hutchinson's cases over the past 14 years.

In considering the types of anaesthesia to be used, two factors had to be taken into consideration :

1. The surgeon's greatest bugbear in the fenestration operation is bleeding in the form of oozing from the bone and/or the flap. Blood collecting beneath the flap in the fenestra, other than in minimal quantities, can ruin the whole operation. Any anaesthetic which increases capillary oozing by raising the capillary pressure or producing vasodilatation—e.g., cyclopropane and ether—should be avoided.

2. Adrenaline is used freely nowadays (*a*) with saline in a preliminary subcutaneous injection of the operation area; (*b*) on "postage stamps" of gauze laid on the flap to render and keep it ischaemic; and (*c*) in the irrigation fluid used during the making of the actual fenestra. This excludes the use of chloroform because of the risk of fibrillation. It has not, however, been found necessary to avoid the use of trichlorethylene on this account. In the early days of the use of this drug a small percentage of cases developed pulse irregularities, but no trouble is now experienced, because the anaesthesia is kept on a "light" plane and the quantities of trichlorethylene used are not more than two drachms (7 ml.) per hour, often considerably less.

Originally (1936–9) nitrous oxide, oxygen, and minimal chloroform were given in a Boyle's machine. On the introduction of trichlorethylene as an anaesthetic this was substituted for the chloroform, and one of the short-acting barbiturates was used as a means of induction. Adrenaline was then used during the operation for the first time. The technique now used is as follows.

The night before operation the patient is given a sedative in the form of potassium bromide gr. 30 (2 g.). Aspirin gr. 10 (0.65 g.), "omnopon" gr. 1/3 (22 mg.), scopolamine gr. 1/150 (0.4 mg.) are given one and a half hours before operation. The nose and throat are sprayed with 2% butethanol through a Rowbotham's spray. An injection of 0.75–1 g. of pentothal, the amount varying with the type of patient, is given, and a blind intubation is performed, using a wide-bore Magill tube coated with 1% nupercaine ointment. If there is any straining or coughing after intubation the throat is again sprayed. Anaesthesia is maintained with nitrous oxide, oxygen, and minimal trichlorethylene. It has not been thought advisable to maintain anaesthesia with nitrous oxide alone, as a high percentage of nitrous oxide produces the capillary oozing it is essential to avoid.

This technique produces smooth anaesthesia with quiet respiration and makes it possible for the surgeon to secure and maintain a bloodless field. Recovery is rapid—frequently as the dressings are being applied—and there are no unpleasant sequelae. No claim for originality is made for this technique, and no doubt other anaesthetists can produce the same conditions using other agents. It is, however, considered that general anaesthesia is preferable to the local analgesia techniques employed by leading authorities on the Continent and in America, where reassuring the patient and sometimes reviving him with black coffee and other stimulants frequently add much time to an already long operation.—I am, etc.,

Salisbury. B. G. HUTCHINSON.

Maclean's Powder

SIR,—In his article entitled "Progress of Gastric Surgery in the Last Half-century" (January 28, p. 206) Sir James Walton says, "It was my old chief, Dr. J. F. Smith, who introduced the powder which later became so popular as Maclean's powder, although, unfortunately for him, he did not advertise it." Many years ago when I first saw an advertisement for "Maclean's Stomach Powder" I was moved to write to Dr. Hugh Maclean to draw his attention to it in case he had as yet not seen the advertisement. In the letter that I received in reply I gathered that he had already seen it, was much concerned, but could do nothing about it, and that the advertiser was a chemist of the name of Maclean. I would hope that Dr. J. F. Smith would not have thought of advertising the powder any more than Dr. Maclean did.—I am, etc.,

Belfast. EILEEN M. HICKEY.

Asthma and the Sympathico-adrenal System

SIR,—In view of the revived interest in the causation of asthma as evidenced by recent letters in the *British Medical Journal* I venture to suggest that asthma and the associated allergic conditions—hay fever, urticaria, allergic rhinitis. migraine, etc.—are primarily due to a mechanical interference with the sympathetic outflow of the autonomic nervous system. The interference is probably in the nature of a summation of stimuli, with the result that this system (sympathetic) is tired out. Freeman,[1] working in Cannon's laboratory, found that the continuous injection of adrenaline in physiological dosage (0.001 to 0.006 mg. per kg. of body weight per minute) over a period of two hours caused a fall in plasma volume from 10 to 29.5%. A reduction in blood pressure to considerably below the normal level occurred upon stopping the injection.[1] The low blood pressure which is so often found in asthmatics can be explained on these lines. I believe that in asthmatics the sympathico-adrenal system is continuously over-stimulated and exhausted, with the result that any physical or emotional effort catches the patient unawares and is liable to precipitate an attack.

Referring especially to asthma, the vagus produces a constriction of the bronchiole and the sympathetic causes it to relax. Acetylcholine is liberated at the terminals of the preganglionic fibres in the ganglia cells. This substance stimulates the excitor cell in each ganglion and causes the liberation of adrenaline at the endings of the post-ganglionic fibres in the bronchioles. The nerve supply to the adrenal medulla is no exception to this rule. Through lack of stimulation of the excitor cells sufficient adrenaline is not produced to maintain the normal needs of the body. In the lungs the dominant action of the vagus produces bronchial spasm or asthma.

The asymmetrical chest of the asthmatic is worthy of serious consideration, and in my opinion herein lies the primary cause of asthma. The relation of the spine to a vertical steel wire, the bob-weight of which rests behind the touching heels, can be examined in photographs. The lateral flexion and rotation of the spine either through passive hyperaemia or indirect pressure interfere with the normal action of the preganglionic fibres and the lateral ganglia cells. The flat upper dorsal spine without scoliosis which sometimes amounts almost to a lordosis

is also worthy of investigation. Perhaps the spontaneous cure of asthma in children is due to a recession of the adenitis and periadenitis of the posterior mediastinal glands. The favourable results obtained, as shown by a recent questionary to my asthmatic patients, prompts me to record these views.—I am, etc.,

Durban, South Africa. D. O'DONOVAN.

REFERENCE

[1]Quoted in Best, C. H., and Taylor, N. B., *Physiological Basis of Medical Practice*, 1945, Baltimore, p. 261.

Radiological Diagnosis of Pneumoconiosis

SIR,—That there is a real difficulty in the consistent radiological diagnosis of pneumoconiosis no one with experience will deny. Drs. Fletcher and Oldham, whose recent report[1] you reviewed in an annotation (January 28, p. 235), are to be congratulated in carrying out such an interesting and careful investigation into the consistency of opinion of ten experienced radiologists on 102 selected radiographs of South Wales coal-miners. One of the categories into which the radiologists were asked to classify the films was "definite pneumoconiosis of certifiable degree but showing only 'reticulation.'" Your annotator states that "for compensation purposes the silicosis medical boards are only required to place the films above or below a certain standard of abnormality."

Surely it is manifestly wrong to compare the work of the pneumoconiosis medical panels with the tests undergone by the ten radiologists referred to above. For compensation purposes the panels have to do much more than merely classify the *x*-ray film. Every applicant for a certificate of disability is, I understand, examined clinically as well as radiologically, not merely for diagnostic purposes but to assess the disability if any exists. Your annotation reads as if disability can be assessed from the radiological picture alone. It is well known that this is not so, for there are numerous cases, in South Wales for example, of men with advanced disease, as judged by *x*-ray examination, who during the war held arduous jobs for years as dock porters, platelayers, bricklayers' labourers, and the like. The converse is also true, that some patients with what is classified radiologically as early reticulation are severely disabled and dyspnoeic on slight exertion or even at rest. Such cases are not confined to the pneumoconiosis of South Wales coal-workers but may be met with in pneumoconiosis or silicosis in other industries. Dr. C. L. Sutherland, senior medical officer of the pneumoconiosis medical panels, puts the position well when he says :[2]

"The criterion in arriving at an assessment of disablement benefit . . . is now loss of physical or mental faculty. In the case of pneumoconiosis the injury to the lungs may lead to loss of faculty in the form of shortness of breath or other symptoms. This imposes disabilities at work or play as, for example, inability to climb stairs or to walk quickly. The sum of these disabilities makes up the disablement."

There is another important point about *x*-ray diagnosis of pneumoconiosis. It is generally accepted that certain dusts, notably iron and its oxides, are inert when inhaled into lung tissue, although their accumulation in the lymphoid aggregations and lymphatic vessels of the lungs may eventually lead to the *x*-ray appearances of reticulation or nodulation. The reticulo-nodulation of the siderosis of a welder may be indistinguishable from the reticulo-nodulation of a case of silicosis, although the welder may be fit and symptomless, with good chest expansion and good exercise tolerance, and the silicosis subject dyspnoeic and with pulmonary fibrosis. In both cases the *x*-ray film may show a symmetrical and normal thoracic skeleton, with the heart and mediastinum central and the diaphragm normal. The only way of finding which man has the fibrotic chest is by examining them clinically.

I raise these points because I feel that too much weight is being placed on the radiological element in the diagnosis of pneumoconiosis without adequate clinical examination and without skilled investigation of the occupational history.—I am, etc.,

Glasgow. A. T. DOIG.

REFERENCES

[1] *Brit. J. Industr. Med.*, 1949, **6**, 168.
[2] *Post-Grad. med. J.*, 1949, **25**, 650.

The Synovial Membrane

SIR,—Professor D. V. Davies, in his report on the structure and functions of the synovial membrane (January 14, p. 92) made the following statement :

"Engel (1941) has reported somewhat paradoxical results from division and stimulation of the sympathetic supply to perfused joints, the former apparently decreasing the permeability of the capillary bed here and the latter increasing it; this worker's interpretation is open to some doubt, and, in view of the paucity of nerve supply even to the vascular bed, his results may have been obtained by diversion of more blood to other regions following sympathectomy, or vice versa."

On this statement I have to make the following comment : (1) It is correct that I found decreased capillary permeability in the knee-joint after unilateral lumbosacral sympathectomy (not division, as stated by Professor Davies). This was shown by decreased dye penetration from the blood through the synovial membrane when the knee-joint was perfused.[1] (2) It is incorrect that I reported on increased capillary permeability from stimulating the sympathetic supply. Such experiments were not performed. (3) Professor Davies does not explain what he finds paradoxical in my experiments. He thinks that the decreased dye excretion of the sympathectomized side might be caused "by diversion of more blood to other regions following sympathectomy." It seems to have escaped his attention that the blood supply was carefully recorded in all experiments by the thermoelectric method, and that a decreased capillary permeability was observed with a simultaneous increase in blood supply.

In my experiments I was less concerned with local conditions of the knee-joint and the synovial membrane than to demonstrate a wider principle—namely, that the sympathetic does not control only the calibre but also the permeability of the capillaries. My results are supported by those of Ascher and his pupils, obtained in the eye. It seems that oedema of the lung can also be controlled by blocking the regional sympathetic nerve supply, applying the same principle. On the other hand, my other experiments[2] which pertain solely to the function of the synovial membrane and which are of practical significance were not mentioned by Professor Davies.—I am, etc.,

Ansdell, Lancs. D. ENGEL.

REFERENCES

[1] *J. Physiol.*, 1941, **99**, 161.
[2] *Quart. J. exp. Physiol.*, 1940, **30**, 231.

Perforation of Carcinoma of Stomach

SIR,—Dr. Richard Doll (January 28, p. 215) has done a service in drawing our attention to the fact that many cases of carcinoma of the stomach which not only are at an operable stage but, more important, at a curable stage are lost through failure to grasp an opportunity providentially presented. I feel sure that many series of gastric-ulcer perforations in males, if adequately followed up, would show an incidence of carcinoma comparable with his of 8%.

I do not think, however, that we should be quite as drastic in our approach to the problem as Dr. Doll suggests or that we should consider immediate gastrectomy in all men over 30 years of age. I think that fair assessment of each individual case can be made on clinical and other grounds by the operating surgeon. Particular attention should be paid to the following points:

1. *Duration of Gastric Symptoms.*—Patients with a history extending over years are more likely to need resection. It is noteworthy that four out of seven of Dr. Doll's cases had a history of over eight years.

2. *Appearance of Ulcer at Time of Operation.*—Large ulcers or ulcers showing marked induration should be resected. Six out of seven of Dr. Doll's cases are described as having either a large ulcer, a large chronic ulcer, or an indurated ulcer.

3. Suspicious cases should probably have a routine biopsy.

I would like to present the following case history, which I think illustrates admirably the first two points.

A male patient aged 50 was admitted to a nursing-home with a 20-years history of gastric discomfort. In the previous six months he had been treated medically for a gastric ulcer. At operation on August 8, 1948, a small perforation in the anterior portion of a saddle ulcer of the lesser curvature was sutured. It was quite clear from

the appearance of the ulcer and the length of the patient's history that a gastric resection was the only hope of eventual cure, and the patient was informed of this on recovery. The possibility of malignant change was also entertained. On October 22, 1948, a subtotal gastrectomy was performed, and on microscopical examination of the specimen adenocarcinoma was found in the base of the ulcer. The patient is alive and well at the time of writing, and owes his life to a God-sent perforation.

Having decided that gastrectomy is necessary, cases should then, I think, be divided into two groups. In one group, where the patient's condition is good and technical and other facilities are adequate, an immediate gastrectomy is warranted. In the second group, where the patient's condition is poor and working conditions are not first-rate, gastrectomy should be postponed for a period not to exceed three months.—I am, etc.,

Castlerea, Roscommon. SEAN O'BEIRN.

Perforated Peptic Ulcer

SIR,—Peptic ulcer is on the increase, and perforation is an increasing complication. We must therefore acknowledge the value of the review by Drs. F. Avery Jones, P. J. Parsons, and Miss Barbara White (January 28, p. 211). They clearly show that there is little excuse for the undoubted prevalence of high mortality rates following perforation treated by operation or otherwise.

May I draw attention to certain flaws in nomenclature which have hitherto misled clinically and statistically? First, could we not eliminate the term "leaking ulcer," applied in fact to an ulcer which is presumed to have sealed itself off? Some may prefer the term *forme fruste*, but this or any other expression should not be used without accepting the implication that peritonitis may be progressive and further leakage a threat. Further, the term "leaking ulcer" is applied very often, and erroneously, to an ulcer which is undergoing an acute exacerbation and by a local peritoneal reaction without leakage is producing quite acute abdominal signs and symptoms.

Secondly, could the terms "pyloric" and "juxtapyloric" be abolished? Anyone who has attempted to follow up large series of ulcer cases finds himself at a loss to differentiate duodenal and gastric lesions in operation reports. That most "border-line" ulcers are duodenal rather than gastric is suggested by Yudine,[1] who, after performing partial gastrectomies for 982 cases of perforation, was able to show with histological exactitude that 87.5% were duodenal in origin. I would support from my own observation that in cases of doubt ulcers should be labelled duodenal, and so a more exact picture of the incidence of each type would be obtained.

Thirdly, "post-operative shock" as a cause of death following perforation is, and probably always was, a rare event. Admittedly a severe form of primary shock is present in most cases of perforation, but this is directly related to neurogenic and exudative phenomena following peritoneal irritation. The astonishing relief of this "shock" following suture of a perforation is one of the most dramatic pictures in emergency surgery. "Post-operative shock" is really a combination of peritonitis and ileus—sometimes a rapidly lethal condition which has not been suspected or recognized.

Dr. Avery Jones ascribes recent improvement in the mortality rate to intensive antibacterial therapy directed at the organisms invading the peritoneum. That a combination of chemotherapy and penicillin therapy is not routinely employed by all surgeons may be put down to the extraordinary belief that the peritoneal cavity remains sterile in the first few hours after perforation. This is suggested by many textbooks and may well be based on the fact that bacteriological findings usually depend on the culture from one throat swab taken from the peritoneal exudate. In my more recent cases of perforation I have made the practice of taking cultures from the region of the ulcer, from the subhepatic recess, and from the pelvis. Bacterial contamination of the peritoneal cavity is found to be quite variable in location and has no relation to the perforation/operation interval. In fact the first gush of gastric or duodenal content may well produce the most lethal inoculation.

Conservative treatment has little place in the treatment of perforated peptic ulcer. First, its adoption implies an accuracy of diagnosis which so far we cannot achieve. Secondly, most perforations are duodenal in origin, and gastric suction (which is usually the rule), though it may lessen leakage from a duodenal ulcer, will not necessarily stop leakage. In ileus—invariably present following perforation—intestinal contents must well up the duodenum and increase peritoneal contamination. The influence of chemotherapy and antibiotics on the course of peritonitis is exerted primarily in the peritoneal cavity, but I would go further and affirm that chest complications, formerly looming large in the list of fatal complications, are usually secondary to peritoneal complications such as ileus, general peritonitis, and subphrenic abscess. These too are diminished by control of peritoneal infection.

Modern anaesthetic methods have undoubtedly contributed to better results in emergency surgery, but I believe that certain complications are less often seen if we have available a skilled anaesthetist at all hours rather than the willing but unskilled duty house officer of earlier years. One need not look far back to recall the days when because of inefficient anaesthesia it was often difficult to locate a perforation. For similar reasons I believe that subphrenic abscess is much rarer than ten years ago. This is partly because of better post-operative treatment of peritoneal infection, but also because patients are usually spared that violent pumping action of the diaphragm so often the accompaniment of amateurish anaesthesia. Such action not only forces out more stomach or duodenal contents but also sucks infected material into the subphrenic spaces in quantity far beyond the absorptive capabilities of the region.

I would support Dr. Avery Jones's contention that the primary cause of a fall in mortality is effective control of peritoneal infection and that improved anaesthesia, fluid-balance maintenance, and general improvements in post-operative care are secondary factors. I would stress certain additional surgical prerequisites: (1) early and accurate diagnosis; (2) a short period of pre-operative preparation to diminish the effects of primary shock; (3) a rapid operation; (4) a simple technique of closure; (5) post-operative morphine to diminish the risk of ileus; and (6) post-operative gastric decompression. I believe that with more attention to the details focused by Dr. Avery Jones no surgeon should be content until he can boast a mortality rate for perforated peptic ulcer below 5%.

Finally may I help to explode a myth propagated as recently as 1939 that "all cases over 70 years of age will succumb however treated" and advanced by many as an argument favouring conservative treatment for the aged rather than operation? I can report a successful closure of a perforation of a duodenal ulcer in a man of 85. Admittedly if the aged perforate they may not be good surgical risks, but it is my experience that with conservative treatment they will surely die.—I am, etc.,

Liverpool. JOHN A. SHEPHERD.

REFERENCE

[1] *J. Int. Chir.*, 1939, 4, 219.

Erysipeloid

SIR,—My attention has recently been drawn to Dr. R. A Bush's medical memorandum on erysipeloid (October 29, 1949, p. 964) in which he states that this infection is by no means common. I agree with Mr. R. J. McNeill Love (December 17, p. 1411) that the disease is of frequent occurrence and suffers from lack of recognition. Seven cases were reported by Barber and his colleagues in 1946,[1] and I subsequently reported[2] 33 recorded cases treated between August, 1944, and November, 1945, while I was resident assistant surgeon at St. Thomas's Hospital. Three followed cuts while handling live pigs, six occurred from injuries associated with meat, nine from abrasions from rabbit bones, 12 from scratches with fish bones, two developed the disease after cat bites, and one man scratched himself on a poultry box. Several other cases were seen, but the nature of the predisposing injury is not recorded.

The majority of the sufferers were housewives, with butchers as a close second. The usual history was of a definite cut or scratch, and the erysipeloid developed after an incubation period of about one week. Usually on the patient's first attendance the original injury was still visible, though commonly scabbed over. Most often the cut lay on a finger, and the erysipeloid spread from this lesion proximally up the finger—preferring the thin skin of the dorsal surface to the coarser palmar skin—whence it frequently travelled across the web and spread along the adjoining digit. This curious "down one finger and up the next" spread I consider diagnostic. The majority of

our patients complained, not of pain, but of a feeling of stiffness and tightness in the affected part, which had a mottled appearance—some areas purple and others dark red—with a poorly demarcated edge. Without treatment the condition is self-limiting and lasts 6–8 weeks. In the cases I have seen there has been little or no general toxaemia, though in several cases the whole of the dorsum of the hand and even lower forearms were involved.

Like Dr. Cyril Boroda (December 17, p. 1411), I found sulphonamides useless. Penicillin I have since used, though with varying success, as although the disease is usually cured in 4–7 days a minority linger on for several weeks despite adequate dosage. In answer to Dr. Boroda's query, the casualty officer here tells me he has seen six cases in the past six months, and I myself have seen a similar number in private and hospital practice in the Black Country.—I am, etc.,

Wolverhampton. E. G. DOLTON.

REFERENCES

1 *Lancet*, 1946, **1**, 125.
2 Ibid., 1946, **1**, 327.

Anaphylactoid Purpura in Pulmonary Tuberculosis

SIR,—I was very interested in the article on "Anaphylactoid Purpura in Pulmonary Tuberculosis" by Drs. P. G. Dalgleish and B. M. Ansell (January 28, p. 225), as we admitted a similar case to hospital recently.

A young man aged 19 was admitted on October 1, 1949, with a 3-weeks history of pyrexia, loss of appetite, and loss of weight. There was no family history of tuberculosis or history of contact. He was said to have suffered from recurrent attacks of eczema of the hands from the age of 3 years. On examination, he had obviously lost a great deal of weight, was slightly anaemic, and his abdomen felt tumid, but there were no other abnormal physical signs. He had a remittent pyrexia, with evening temperatures of 102°–103° F. (38.9°–39.4° C.).

Chest radiograph, blood culture, culture of the stools, Widal reaction, and Mantoux test (1/10,000 and 1/1,000) were negative. Blood count on admission: red cells, 4,400,000; haemoglobin 12.8 g. per 100 ml.; white cells 3,500 (polymorphs 76%, lymphocytes 16%, monocytes 8%).

He continued to run a temperature and ten days later developed a pain in the right side of the chest on breathing—accompanied by a definite pleural rub. He developed signs of a small right pleural effusion, which was confirmed by a chest radiograph—10 ml. of clear straw-coloured fluid were removed by aspiration (lymphocytes 98%, polymorphs 2%, culture sterile) The specimen was cultured for tubercle bacilli and two guinea-pigs were inoculated and killed at three and five weeks. All results were negative. Soon afterwards he developed a small left-sided effusion.

Eight weeks after admission he suddenly developed a generalized purpuric eruption, most profuse on the arms and legs. There were fairly large bullae on the lips and the buccal mucous membrane. Two days later he had a severe epistaxis from the left nostril, and this persisted in spite of packing and transfusion with 2 pints (1.1 litres) of group O blood. The foot of the bed was put on blocks and ¼ gr. (16 mg.) of morphine was given and the bleeding stopped.

The Hess test was positive at the time of the eruption, but the bleeding time and coagulation time were normal. Unfortunately a platelet count was not done at the time of the eruption, but a marked diminution in the number of platelets was noted on a Leishman film. A platelet count one week later was normal. Although the purpura was thought to be of the allergic type, it was decided to carry out further investigations. The patient was referred to Dr. J. F. Wilkinson's haematological out-patient department at the Manchester Royal Infirmary, where full investigations were carried out. The Hess test was then negative, the bleeding and clotting times normal, and the platelet count normal. A full blood count and sternal marrow count were also normal.

A radiograph of the chest on December 15, 1949, showed that the right pleural effusion had absorbed but that there was now some infiltration of the right lower lobe. "The appearances are of a bronchopneumonic inflammatory process. Tuberculosis must be considered." The onset of the purpura coincided with a distinct deterioration in the patient's general condition, but once over the acute attack he has slowly improved.

In view of the previous history of eczema in this case it would be interesting to know if there was any previous history of allergy in the other cases reported.—I am, etc.,

Manchester, 10. J. W. FLETCHER.

Idiosyncrasy to Aspirin

SIR,—Idiosyncrasy to aspirin shown by haematemesis is a well-recognized entity, but of sufficient rarity to justify the following report.

An officer aged 34 serving in Malaya was found to be suffering from right-sided renal colic. He was shocked, cold, sweating profusely, and restless, and had twice vomited normal stomach contents in the previous hour. Rigidity and tenderness were elicited over the right loin and in the course of the right ureter. He was given morphine ¼ gr. (16 mg.) (no atropine was available), which had to be repeated in an hour. He was next given mist. sod. cit. and aspirin 15 gr. (1 g.), to be repeated in four hours, when the aspirin was reduced to 10 gr. (0.65 g.).

Eight hours later he was free of pain, asleep, and had taken sod. cit. and aspirin 10 gr. He began taking tinct. belladonnae four-hourly—after being warned of possible toxic effects. He felt quite well except for very slight nausea. Four hours later he was again examined. One hour previously he had taken tea and toast and vomited it immediately. As he then felt better he took aspirin 10 gr., mist. sod. cit., and tinct. belladonnae 10 minims (10.6 ml.). Five minutes later he vomited three-quarters of a pint (425 ml.) of fresh and slightly altered blood. He was shocked, but in an hour again felt well except for slight nausea and tenderness over the duodenal cap. All medicaments were discontinued. No facilities existed for laboratory examinations owing to the geographical position.

The next day he felt well, apart from slight nausea and epigastric tenderness. In the evening he passed a melaena stool, which left him weak for an hour. Three days later he passed a small renal calculus without discomfort, and shortly afterwards was evacuated to the nearest military hospital. A barium meal and follow-through were negative.

As it seemed impossible to correlate renal colic with haematemesis in the absence of any blood dyscrasia, the haematemesis was assumed to be due to aspirin idiosyncrasy. It was of interest to discover that the patient had never previously taken aspirin or other oral medicament. In the present case he had taken aspirin 35 gr. (2.32 g.) in 12 hours.

I am indebted to D.M.S., FARELF (Brigadier T. Young, O.B.E.), and the consulting physician (Brigadier Bennett) for permission to publish this report.

—I am, etc.,

Coatbridge, Lanark. HENRY A. N. RICHMOND.

Fate of the Foreskin

SIR,—I am grateful to the many correspondents who have commented on my article (December 24, 1949, p. 1433), particularly to those who have added further facts to a subject the discussion of which in the past has too often engendered heat rather than light. A number of pertinent questions have been asked.

Phimosis. Dr. C. A. Royde (January 21, p. 181) doubts my contention that true phimosis causing urinary obstruction virtually never occurs and so cannot be responsible for many of the child deaths registered as due to "circumcision or phimosis." The facts are: (1) I have long searched for such a case without finding one; (2) two experienced paediatric surgeons, Mr. Twistington Higgins and Mr. Denis Browne, both interested in urology, inform me that they have never met such a case; and (3) the only reference I know is that of Campbell,[1] who writes, "I know of four infant deaths in New York City from this cause," without giving further details—but this author's account of the anatomy of the prepuce is so at variance with my own that I feel bound to question his explanation of these deaths.

Drs. H. M. Rose and A. M. Gould (January 28, p. 247) find "true phimosis" present in one-sixth of the infants referred for circumcision. I am well aware of the appearances they describe, and if they will try the effect of simply completing the separation of prepuce from glans they will be surprised to see that the preputial constriction is an illusion. In this context Dr. B. Webber's experience (January 28, p. 247) is valuable: in circumcising some 200 infants he found none in which the prepuce was not easily retractable after separation.

Venereal disease. Limitation of space caused me to deal summarily with the evidence, but my conclusion that it "seems scarcely to warrant universal circumcision as a prophylactic

against venereal disease" was based on a critical reading of the literature, including most of the authors listed by Dr. C. A. Royde when he affirms that it has been well established that circumcision reduces the risk of syphilis. In fact the existing evidence bearing on this matter proves disappointingly poor. For instance Wolbarst's[2] figures, which are much quoted, do not distinguish between chancre and chancroid; as chancroid is the one venereal disease which all agree is uncommon in the circumcised his figures fail to prove that syphilis is less common in the circumcised. Comparable deficiencies vitiate the value of the statistical evidence of other older authorities, as Lloyd and Lloyd[3] showed in their review of the subject in 1934. Since then little further matter has been published except for a study by Wilson[4] of venereal disease as seen in the Canadian army. His results are difficult to assess because, although both chancre and chancroid were shown to be much less common in the circumcised, so also was gonorrhoea, although there has been general agreement that gonorrhoea is in no way prevented by circumcision. The only careful study of the value of circumcision in preventing syphilis remains that of Lloyd and Lloyd, whose results from Guy's Hospital V.D. department showed that the proportion of circumcised men was 22% (of 118) with genital syphilis, compared with 27% (of 278) with gonorrhoea—i.e., there was no great difference which would favour the idea that circumcision prevented syphilis. A fair summary of the evidence would be that circumcision does not prevent gonorrhoea, greatly reduces the risk of chancroid, and possibly may have some small effect in reducing the risk of syphilis, though this is unproved.

Penile cancer. Dr. B. J. Peck (January 14, p. 122), among others, considers that as this disease can be prevented by circumcision it should be, since even if (as I think likely) rational local hygiene were equally effective a number of men will never maintain the requisite standard of hygiene. A corollary of this view is that all males should be circumcised in infancy, and that if this is done in the first month the risk of an anaesthetic can be avoided. Deaths per year from "circumcision or phimosis" in England and Wales between 1940 and 1947 have averaged 3 in the first month of life and 12 in the first year, and it seems certain that if all the 400,000 males born each year in this country were circumcised a certain number of disasters must inevitably occur from infection, if not from the horrific surgical bloomers listed by Mr. Denis Browne. The question comes down to this: Is it justifiable to sacrifice a few infants in order to save a probably larger number of elderly and (as I have shown) low-grade men from cancer? Some may consider it is.

"The supposed aesthetic or erotic superiority of the shorn member." Dr. Dermod MacCarthy (February 4, p. 304) elegantly shows us that Michelangelo would have voted conservative on the first of these issues, while Dr. R. C. MacKeith (January 14, p. 122) strikes a blow for unsatisfied English womanhood and asks for more information about the second. To the evidence, sketchy and circumstantial, I have already adduced only this can be added: outside the English-speaking peoples of the West circumcision is not customary, and Frenchmen, Swedes, and South Americans, to name three different races who are said to take these matters quite seriously, seem to have felt no need to employ circumcision to further their ends.

Finally, I believe this controversial issue can be simplified to a choice between two possible views, either of which accords with the facts. Some may hold that *all* male infants should be circumcised, irrespective of the state of the prepuce, in order possibly to prevent certain later disease—paraphimosis, cancer, and venereal disease. The operation should then probably be done in the first month, and in the full knowledge that an occasional accident may cause the loss of an infant's life. This is rational prophylaxis. Others will reserve circumcision for the occasional case where disease of the prepuce requires this treatment, having in mind that the prepuce cannot normally be retracted during the first few years. This is rational therapeutics.

There is a third policy—that which largely obtains to-day—whereby a proportion of infants, varying from 12 to 84% in different sections of the community, are almost arbitrarily selected for circumcision on the grounds of supposed phimosis. The burden of my argument has been to show that this practice fails utterly to accord with anatomical facts. I still have hopes that Mr. Geoffrey Parker's (January 21, p. 181) sorrowful comment on my article—"that no one will take the slightest notice of what he says"—may prove an overstatement.—I am, etc.,

Cambridge. DOUGLAS GAIRDNER.

***Correspondence on this subject was closed in last week's *Journal*, which went to press before Dr. Gairdner's letter was received, but, as the author of the article which is the subject of this correspondence, he should have the right of reply.—ED., *B.M.J.*

REFERENCES

1 In Brennemann's *Practice of Pediatrics*, 1948, Hagerstown, vol. 3, p. 34.
2 Wolbarst, A. L., *Virginia med. Monthly*, 1934, **60**, 723.
3 *Canad. med. Ass. J.*, 1947, **56**, 54.
4 *British Medical Journal*, 1934, **1**, 144.

British Institute of Radiology

SIR,—The British Institute of Radiology is exploring the possibility of reviving or starting new Branches in areas of the country not already covered by existing ones. Members of the British Institute of Radiology who are interested are invited to write to the honorary medical secretary expressing any views they may have in this matter.—I am, etc.,

J. A. C. FLEMING,
Honorary Medical Secretary,
British Institute of Radiology.

32, Welbeck Street,
London, W.1.

Development of Psychological Medicine

SIR,—Dr. John Rickman's article in your "Fifty Years of Medicine" issue (January 7, p. 30) and the editorial reference to it (p. 66) raise a question of considerable importance. It is calculated to give the impression that the British medical profession (of which the *B.M.J.* is the mouthpiece) accepts and endorses the dubious theories outlined as an integral part of modern medical science. I think it very probable that a majority of the profession would repudiate this proposition, and would assert that these theories not only take unjustifiable liberties with the laws of probability, but are unsupported by any evidence which would merit the description "scientific."

This sceptical attitude is by no means weakened by Dr. Rickman's statement that "Freud's theory of dreams provides the main conceptual structure on which psychodynamical research is built, and therefore on which therapy is based." For Freud himself seemed to have some glimmerings of doubt as to the stability of this foundation—I quote from his *The Interpretation of Dreams*:

"The entire memory of the dream is open to an objection calculated to depreciate its value very markedly in critical eyes. One may doubt whether our memory, which omits so much from the dream, does not falsify what it retained" (p. 38).

And again:

"It is a question what value we may attach to our recollections of dreams" (p. 39).

Yet on the shifting sands of this unstable foundation he proceeds to build his elaborate and dubious theoretical constructions—the dream as wish-fulfilment, the sexual basis of neurotic illness (with its causative roots often in infancy), and all the rest of it. He makes the most perfunctory references to the brain and its functions, although one would expect that this apparently negligible organ would figure prominently in any psychology which aspired to be really scientific. Yet Freud appears to have had a prophetic premonition that his own somewhat exotic brand of psychology (and this would include that of his psycho-analytic disciples) will eventually be superseded by a more scientific psychology. To quote again from *The Interpretation of Dreams* (my italics):

"Even where on investigation the psychic can be recognized as the primary course of a phenomenon, *a more profound penetration*

will some day succeed in finding a continuation of the path to the organic determination of the psychic. But where the psychic must be taken as the terminus for our *present* knowledge, it should not be denied on that account." (p. 35).

I have not noticed any aspirations on the part of psychoanalysts to display this "more profound penetration"—to attempt the correlation of mental phenomena with cerebral processes. They prefer the psychic fantasies of the Freudian system. Their right to do is of course undeniable, but it is questionable if their theoretical framework has any rightful place in scientific medicine.—I am, etc.,

Dunfermline, Fife. A. C. DOUGLAS.

SIR,—Dr. R. A. MacCarthy's letter (January 21, p. 182) strikes a note, by now so easily recognized and so often heard, which is symbolical of the psychiatric mechanist and laboratory man—the man who pins his faith to the bug, the bench, and the Bunsen burner. But as a critique of Freudian theory and practice, of which Dr. John Rickman (January 7, p. 30) gave us so masterful an exposition, the letter comes near to being fatuous. Anyone who will take the trouble to look into it will be struck by the presence of a vein of hopes deferred running right through it. Dr. MacCarthy says, "history will prove—the day will come—at a future date—the time will come—no one will ever be cured—perhaps—psychoses are due to some as yet undiscovered bodily cause—the time will come—perhaps—probably. . . ." Really, could he but have waited another 50 years his letter might "perhaps" have some meaning.

For the benefit of those who are not versed in psychiatry I append a list of mental diseases with their supposed causes (or otherwise), culled from my own treatise on psychiatry.[1]

Delirium tremens: usually, but not always, associated with somatic illness.

Manic-depressive psychoses: no causative physical findings, depressions of later life are often associated with physical illness.

Involutional melancholia: pre-psychotic personality is of paramount importance. Endocrine causation unproved; endocrine therapy relieves some of the menopausal symptoms, leaving severe psychotic state substantially unaltered.

Schizophrenia: biopsy findings in the testicles are not causally related to psychosis. Thyroid medication has benefited a very small percentage of catatonics in whom nitrogen storage and its toxic effect were blamed.

Paranoia: no physical findings.

Pre-senile psychoses: plaques and neurofibrillary changes in C.N.S. marked, constituting the "aetiology" of the psychosis.

Senile psychoses: degenerative changes in brain tissue coincident with, if not causal to, the psychic changes. Premorbid personality, as always, gives colouring to symptoms.

Cerebral arteriosclerosis: many never develop mental symptoms; marked discrepancy between brain damage and mental symptoms.

General paresis: invasion of C.N.S. by the *Treponema pallidum*. Problems too numerous to list, remain unanswered.

Idiopathic epilepsy: no valid physical theory. May be a psychogenic disease coupled with inherited cerebral dysrhythmia.

Psychoneuroses: no known physical cause.

Alcohol addiction: no known physical cause.

Huntington's chorea: degenerative changes in C.N.S. Psychic symptoms based on premorbid personality, later merging into dementia.

Post-encephalitic symptoms: perivascular changes in basal ganglia. Psychic changes are a reaction to physical disablement. Somatic pathology not the cause of mental symptoms.

Freudism may be as unpopular in Eire as Christianity is in Russia, but this is hardly sufficient grounds for wholesale wishful thinking.—I am, etc.,

Kingswinford, Staffs. W. A. O'CONNOR.

REFERENCE

[1] *Psychiatry—A Short Treatise*, 1948, Bristol.

Students' Literary Style

SIR,—In their letter (January 28, p. 252) Professor C. A. Wells and Mr. J. A. Shepherd ask whether the present-day student writes a worse paper than his predecessor of 25 years ago, and, if that is so, they wish to know the reason. I am in no position to answer the first part of that question, but should the voice of authority reply in the affirmative, should we not, as Professor Wells suggests, try to trace the possible cause?

The words of Longfellow, "Life is real, life is earnest," in all probability are more true to-day than when they were written, and they certainly apply to the life of the medical student. During the past 25 years the field of medical knowledge has greatly expanded, and, as a direct result, the modern student in order to gain the same qualification as his predecessor of a quarter of a century ago has to learn and know more and more about more and more.

We are taught by men of whom each in his sphere is a specialist. The surgeon requires us to know the ins and outs of surgical diagnosis. The cardiologist expects us to know something, if not a great deal, of the secrets of electrocardiography. The pathologist may fail us if we cannot recognize one of our 400-odd slides. The bacteriologist desires that we have a "working knowledge" of "phage typing," and yet 35 years ago the Twort–d'Herelle phenomenon had not been described.

As the years go by more theories are put forward to explain conditions and diseases of which the cause is unknown. The student has to keep pace with these discoveries, knowing full well that what he learns to-day may be obsolete to-morrow. I believe that in the old days, provided that he possessed the necessary financial backing, the student was given almost unlimited time in which to obtain his qualification. That is not so to-day. He is given a maximum of two opportunities to pass a professional examination. The fear of failure hangs heavily on everyone, and more so on the ex-Service student who may be married with children.

With these thoughts in our minds, to "pass the exam." is of paramount importance and to gain marks is everything. In order to gain those marks facts and still more facts are essential to the answer. Those facts and relevant theories, which in a textbook may occupy several pages, must be marshalled, compressed, expressed, and written down by the student in the space of thirty minutes or so allotted for the question: This length of time does not always allow him to prove his literary ability.

I do not wish to condone "poverty of style and vocabulary, and faults in spelling." Indeed, in a professional man they are to be deplored, but is not the modern student's lack of literary style more apparent than real? It is in no spirit of retaliation that I pen these words, but, now that the gauntlet has been flung down, should not someone pick it up in defence of the student of 1950?—I am, etc.,

Liverpool. RANGER M. WHELAN.

POINTS FROM LETTERS

Aerosol Treatment with Penicillin

Mr. A. E. BERNSTIEN (Liverpool) writes: I have just completed a series of 100 cases of bronchitis and asthma in which aerosol penicillin has been used. The average course was five treatments with 500,000 units of penicillin in distilled water and propylene glycol for each patient, although five cases required an extra three treatments. My conclusions have been that in chronic bronchitis and bronchitis with asthma the results have been superior to any I have known before. The average patient is definitely improved after two treatments and appears to be either cured or vastly improved after the full course. Out of the 100 cases, only 5 derived no benefit, and of these two had to be taken off treatment because of penicillin sensitivity. I have in the course of my work to deal with many cases of bronchitis and asthma, and I believe that we have in aerosol therapy a therapeutic blessing. It should also be mentioned that a most advanced case of bronchiectasis has lately had 5 g. of streptomycin and 10 million units of penicillin by this method and seems to have been given a new lease of life.

Second Thoughts on Streptomycin

A doctor writes: I have been prompted to write to you by the paragraph, "Second Thoughts on Streptomycin," which appeared under "Medical News" in the *Journal* of December 3, 1949 (p. 1303). In certain cases I am sure that dihydrostreptomycin has one very important advantage over streptomycin. The latter can be so painful for so long that the patient can think of little else for most of the day and quite a lot of the night; whereas the same patient can suffer no pain whatever with the former. I write from personal experience. I endured ten days' treatment with streptomycin only because I had the fatuous hope that 14 days would be the length of my course. On the other hand, I never had any pain with 140 injections of dihydrostreptomycin.

Obituary

WILLAM S. EDMOND, F.R.C.S.

Mr. W. S. Edmond, who died suddenly on January 8 at the age of 67, was for many years senior honorary surgeon to the Royal Salop Infirmary. He retired in 1945 and had been living at All Stretton, Shropshire.

William Square Edmond was born at Chew Magna, Somerset, and received his medical education at St. Bartholomew's Hospital, where he qualified in 1904 at the age of 21. He took the F.R.C.S. five years later. After holding resident appointments at the London Temperance Hospital and in the provinces, he went into practice in Shrewsbury in 1912, and on the outbreak of war acted as surgeon at No. 2 V.A.D. Hospital there. Later he served in the R.A.M.C. and was posted to No. 18 General Hospital, where he was appointed surgical specialist. He was invalided home from France in December, 1916, and in the following February was selected as surgeon to H.R.H. Princess Christian's Red Cross Hospital. He served also at the Cambridge Hospital, Aldershot, where he was promoted to the rank of major with charge of No. 2 Division.

In 1919, on being appointed honorary surgeon to the Royal Salop Infirmary, Edmond got all the opportunities he wanted to exercise his surgical skill. He decided, in defiance of local tradition, to devote himself to general surgery, and it was not long before his eminence was undisputed. In this connexion no appreciation of Edmond would be complete without a reference to his hands, which he used with the precision and the delicacy of touch of a musician. His technique was a delight to watch. He was a staunch supporter of the B.M.A., and was elected president of the Shropshire and Mid-Wales Branch in 1928.

Will Edmond was an excellent companion and a very popular figure, with a reputation for a peculiar sardonic wit which, while devoid of malice, could be quite devastating. His happiest leisure moments were spent climbing in the French and Swiss Alps and in later years with a dry fly on the Onny, Teme, and the Condover brook. He leaves a widow and three daughters, and there must be many who will join them in mourning his loss.—F. A. A.

W. D. ARNISON, M.D.

William Drewett Arnison, who died in Newcastle on January 27, was born in Allendale Town, but spent the greater part of his long life in Newcastle-upon-Tyne. He was stricken with hemiplegia last summer, and he died two days after his eighty-fifth birthday. Arnison was the last representative of several generations of Arnisons, many of whom were in the medical profession. His father George, his grandfather, and his great-grandfather had all been surgeons in Allendale.

After completing his course at the old College of Medicine in Newcastle-upon-Tyne he graduated M.B., B.S. in 1886, proceeding M.D. in 1890. He took the Conjoint diploma in 1887, and after appointments as house-surgeon and house-physician at the Newcastle Infirmary he went to Hemel Hempstead as house-surgeon to the West Hertfordshire Hospital. After this appointment he returned to Newcastle as a senior house-physician. Then he went into practice on leaving the Infirmary, and quite early became one of the medical officers to the Post Office, a position which he held for many years.

Arnison's career as honorary anaesthetist to the Royal Infirmary began in 1891. His predecessor had been known as "the chloroformist." Arnison did sterling work for fifteen strenuous years, during which time he was the one recognized professional anaesthetist in the town and district. In those days to be the anaesthetist at the Infirmary was no light task, for he might be called upon every day for work in the theatre from 9 a.m. till 2 p.m. Arnison was most punctilious in his attendance and in the performance of his duties. He was a painstaking teacher and set a high standard in his work. His capacity was amply recognized by his seniors and colleagues, and he was pleased when just a few months before his death he was elected a Fellow of the Faculty of Anaesthetists of the Royal College of Surgeons.

It was a surprise to most people when in 1907 Arnison took over what was then designated "the electrical department" at the Infirmary. With Dodds, who had been the hospital plumber, as his devoted assistant, Arnison built up a department which during the 1914–18 war did an enormous amount of work, both for the wards at the Infirmary and for the large military hospital in Armstrong College. In all that concerned the department Arnison was again most interested, careful, accurate, and painstaking. When the department was finally handed over to his successor it was a well-established concern, which rendered excellent service both to the patients and the staff. That was in 1925, when he retired as honorary consulting physician. Arnison was always devoted to the Infirmary, and after leaving the active staff he continued for many years as a member of the house committee and chairman of the drug and instruments committee. In these capacities he brought a leaven of mature experience and common sense to the problems involved. He was a member and regular attender at convocation, and was for twelve years a member of the Senate of Durham University; it gave him great pleasure when he himself was the recipient of an honorary degree.

Arnison was always a great influence for good, for he could not bear humbug of any sort and was a man of absolute integrity. At the Infirmary he leaned to the clinical side, and for fifty years acted as chairman of the Surgical Aid Society, which had been started by his uncle, William Christopher Arnison, a former professor of surgery. He was fond of history, and of military history at that, but poetry was always his first love. He was also much interested in his home county, and sometimes took part in the excursions arranged by the Newcastle Antiquarian Society, of which he was a member. He seldom contributed to the journals, though an interesting address on the history of anaesthesia which he delivered as president of the Students' Medical Society was referred to from time to time. He also assisted Professor Grey Turner in preparing the history of the Newcastle Medical School. His wife died in 1934, and he leaves two daughters. His loss will be keenly felt among many who remember him in his more active years and the smaller band who were his direct associates to the end.—G. G. T.

Dr. PERCY GILBERT HORSBURGH died at Nuneaton on January 30 at the age of 57 after an illness which revealed itself while he was returning from a holiday trip to Madeira. He was educated at Highgate School, and entered St. Bartholomew's Hospital Medical School as a student in 1911. On the outbreak of war in 1914, however, he interrupted his course in order to serve as a surgeon probationer. He qualified in 1917, and after an appointment as house-physician joined the New Zealand Medical Corps and proceeded to France. On

demobilization he returned to his medical school and obtained the London D.P.H. in 1921. After some experience at Wellington, Shropshire, he was appointed medical officer of health for Scunthorpe and Frodingham. In 1925 he was appointed medical officer of health to the Borough of Nuneaton, and this appointment proved a most happy one. For this local authority's excellent health services and up-to-date isolation hospital the chief credit should be given to Dr. Horsburgh. He was seen at his best in committee work. He said little except to point out the essentials, and on these he was uncompromising. On the threat of war Dr. Horsburgh organized the Civil Defence Services of the area. His gallantry during a heavy air raid in 1941 was recognized by the award of the G.M. When it became apparent that Japanese aspirations were likely to involve India in the war the borough was asked to release its medical officer so that he could become medical director of the Mobile Forces Civil Defence Department of the Government of India. Dr. Horsburgh did this task so well that he was sent to Berlin by the Government as senior medical officer to the Military Government at the beginning of the occupation of the city. Dr. Horsburgh was for many years an active member of the British Medical Association. He represented the Nuneaton and Tamworth Division at the annual meeting at Eastbourne in 1931, was chairman of the Division in 1932–3, and acted as joint secretary from 1937 until his departure to the East. He married in 1924 Miss Margaret Clark, who survives him with two sons and a daughter.—D. S. P.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

Professor A. V. Hill, F.R.S., Foulerton Research Professor of the Royal Society and Honorary Professor of Physiology at University College, London, will deliver a lecture on "The Sudden Change of State induced in Muscle by Stimulation" in the Physiological Laboratory Theatre of the University on Tuesday, February 28, at 5 p.m.

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examination indicated:

D.T.M.&H.—A. Deuchars, Muriel M. D'Souza, R. D. Eagland (recommended for the Milne Medal in Tropical Medicine and the Warrington Yorke Medal in Tropical Hygiene), K. G. Koshi, C. M. Norman-Williams, S. L. H. Smith, W. G. Timmis.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a meeting of the Council of the College, held on February 9, with Sir Cecil Wakeley, President, in the chair, the Hallett Prize for January, 1950, was awarded to Harold Ellis, of the University of Oxford.

Diplomas of Membership were granted to the 135 candidates whose names were printed in the report of the meeting of the Royal College of Physicians of London as recipients of the L.R.C.P. in the *Journal* of February 4 (p. 312).

Diplomas in Public Health were granted, jointly with the Royal College of Physicians of London, to the eight successful candidates whose names were printed in the report of the meeting of the Royal College of Physicians of London in the *Journal* of February 4 (p. 312).

A Diploma in Psychological Medicine was granted, jointly with the Royal College of Physicians of London, to F. O'D. Finigan.

The following hospitals were recognized under paragraph 23 of the Fellowship regulations: Royal Eye and Ear Hospital, Bradford (registrar and house-surgeon for ear, nose, and throat, registrar and house-surgeon for ophthalmology); West Hill Hospital, Dartford (house-surgeon till February, 1951); Metropolitan Hospital, London (an additional house-surgeon); Royal Isle of Wight County Hospital, Ryde (surgical registrar, house-surgeon); Kent and Sussex Hospital, Tunbridge Wells (registrar to ear, nose, and throat department).

The Council of the College was entertained to dinner by the Master, Wardens, and Court of the Barbers' Company at Tallow Chandlers' Hall on February 7. In the magnificent collection of plate belonging to the Barbers' Company pride of place goes to the silver-gilt Grace Cup which was given to the Company of Barber-surgeons by King Henry VIII in 1540, and on this occasion the surgeons were delighted to receive a replica of this beautiful cup from their colleagues of old time, the barbers.

The Services

DOMVILLE MEMORIAL GIFT

The trustees wish to elect a recipient of the Domville Memorial Gift on or about March 14. The present value is £5 7s. 8d. yearly, tenable for three years, and the recipient is to be a child or children of a deceased naval medical officer in necessitous circumstances and under the age of 15 years. Particulars of claim and birth certificates must be sent by March 10 to the honorary secretary, Domville Memorial Gift, R.N. Hospital, Haslar, Gosport, Hants, who will give any further information desired.

DEATHS IN THE SERVICES

Colonel JOHN RODGER, of Guynach, Barry, Angus, who had a distinguished career in the Indian Medical Service, died in Dundee Royal Infirmary on February 7 as the result of an accident. He was 58 and had retired only in 1948, after the constitutional changes in India. John Rodger was a native of Glenbuck, Ayrshire. He graduated M.B., Ch.B. at Edinburgh University in 1915 and he took the diploma in tropical medicine and hygiene in 1932. After graduating he joined the R.A.M.C. and served in Egypt, Palestine, and France, being awarded the M.C. and bar. From 1920 onwards he was with the Indian Medical Service. After nine years on the military side he was seconded to the foreign and political department. He was residency surgeon at Udaipur, Rajputana, and later civil surgeon, Sibi and Ziarat, Baluchistan. In Baluchistan he was promoted to chief medical officer, and was responsible for the clearing of Quetta after the earthquake there. For his services in this connexion he was awarded the O.B.E. and the Cross of St. John of Jerusalem. After a period as legation surgeon at Nepal and residency surgeon at Kashmir, he was recalled to military duties in 1941 and commanded two large hospitals. From 1946 he was A.D.M.S. Madras area.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* there was an increase of 198 in the notifications of measles, with a decrease of 57 in the incidence of scarlet fever.

The main changes in the notifications of scarlet fever were an increase in Lancashire 52 and a decrease in Yorkshire West Riding 39. The rise in the incidence of measles was due to increases in Norfolk 104 and Lancashire 97.

The chief features of the returns of diphtheria were increases in Warwickshire 7 and Lancashire 5. The largest variation in the incidence of whooping-cough was a rise of 31 in Norfolk.

The incidence of poliomyelitis increased slightly. There were 10 more notifications than a fortnight earlier, when the continuous fall, which had lasted for thirteen weeks, ended.

The chief centres of dysentery were: Yorkshire West Riding 53 (Leeds C.B. 37, Sheffield C.B. 10); Lancashire 17; London 14; Northumberland 10 (Newcastle-upon-Tyne C.B. 9); and Durham 10.

In *Scotland* infectious diseases were less prevalent, and there were decreases in the notifications of scarlet fever 58, measles 32, whooping-cough 26, and acute primary pneumonia 25. The chief centres of dysentery were Glasgow 20, Edinburgh 13, Stirling County 9, and Paisley 7.

In *Eire* increases were recorded in the notifications of measles 27 and diarrhoea and enteritis 13. There was a decrease of 15 in the incidence of whooping-cough. The rise in the notifications of measles was due to an outbreak in Kilkenny, Waterford No. 2, R.D., 20. The increase in the incidence of diarrhoea and enteritis was fairly general throughout the country.

In *Northern Ireland* the notifications of whooping-cough decreased by 48, while a rise of 13 was reported in the incidence of measles. Only 3 cases of whooping-cough were notified in Down county compared with 67 in the preceding week.

Week Ending February 4

Notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,924, whooping-cough 1,588, diphtheria 75, measles 3,530, acute pneumonia 1,187, acute poliomyelitis 38, dysentery 217, paratyphoid fever 3, typhoid fever 5; 61 deaths were attributed to influenza in the great towns.

No. 4

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended January 28.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1950					1949 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Meningococcal infection	35	4	23	3	2	24	4	25	1	1
Deaths		1	1				—	1		
Diphtheria	88	10	30	4	6	131	5	47	5	4
Deaths	3	1	—	1	—	3	—	—	—	—
Dysentery	149	14	54	2	—	104	41	36	—	4
Deaths				—	—				—	—
Encephalitis, acute	4	—	—	—	—	1	—	—	—	1
Deaths		—					—			
Erysipelas			25	10	5			40	4	5
Deaths										
Infective enteritis or diarrhoea under 2 years				30					49	
Deaths	21		3	1	1	34		7	3	1
Measles*	2,532	24	18	80	232	10,254	357	63	41	163
Deaths†			—	—	—			1	—	1
Ophthalmia neonatorum	44	—	6	—	—	39	3	10	—	1
Deaths										
Paratyphoid fever	6	—	—	—	—	1	—	2 (B)	1 (B)	—
Deaths	—		—	—	—	—	—	—	—	—
Pneumonia, influenzal	902	52	15	1	15	1,050	45	16	13	9
Deaths (from influenza)‡	47	4	6	1	1	45	3	18	2	—
Pneumonia, primary	305	52	303	¶	12	314	51	472	33	12
Deaths				10					18	
Poliomyelitis, acute	60	4	4	9	—	28	3	3	1	—
Deaths§	7	2		1		3	—			
Puerperal fever		—	11				—	10		
Deaths										
Puerperal pyrexia‖	93	7	8	—	—	96	9	13	1	1
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,966	92	223	96	139	1,311	77	288	92	60
Deaths†			—	—	—			—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	7	2	—	1	—	3	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,764	77	398	62	53	2,942	195	248	66	67
Deaths	2	1	1	—	—	14	1	—	1	—
Deaths (0–1 year)	310	50	33	19	11	374	39	56	30	12
Deaths (excluding stillbirths)	5,955	943	• 733	222	129	5,881	944	833	222	148
Annual death rate (per 1,000 persons living)			14·7					16·7	13·8	
Live births	7,411	1267	836	346	221	7,754	1267	953	405	287
Annual rate per 1,000 persons living			16·8					19·1	25·1	
Stillbirths	196	22	25			234	30	19		
Rate per 1,000 total births (including stillborn)			29					20		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales and Eire.

¶ Primary pneumonia no longer notifiable in Eire.

Medical News

Royal Microscopical Society

Dr. G. M. Findlay, Editor of *Abstracts of World Medicine* and *Abstracts of World Surgery*, has been elected president of the Royal Microscopical Society for 1950.

Royal Statistical Society

The Royal Statistical Society has received an anonymous gift of £30,000 with the sole condition that it be devoted exclusively to the housing of the society. Fellowship of the society has about doubled in the last 10 years, and for some time the council has been concerned about accommodation. A committee has been set up to consider in detail how best to use the gift.

The Nurses Act

The General Nursing Council for England and Wales will be reconstituted on September 22 under the Nurses Act, 1949. The members of the Assistant Nurses Committee appointed by the council who hold office on September 21 will vacate the office at the end of that day. A Mental Nurses Committee of the council will be established at the end of three months from September 22 or after such longer period as may be ordered.

Pest Control Chemicals

The British Standards Institution has set up a committee to devise simple names for pest control chemicals. These will not conflict with proprietary names, but will be of assistance to users as short everyday names by which the active ingredients of pest control products, with otherwise unpronounceable technical names, may be known.

Medical Films

The history, function, and manufacture of insulin are depicted in a new 16-mm. black-and-white film produced by the Wellcome Film Unit with spoken commentary (running for about 22 minutes). It opens with a brief historical survey of diabetes mellitus and the discovery of insulin; the physiological function of insulin is then demonstrated by means of animated diagrams, after which the complete manufacturing process is shown from the raw material to the finished standardized product. The Wellcome Film Unit has also completed a 16-mm. silent film in colour (running for about 8 minutes), demonstrating the hydrodynamics of blood flow in the basilar artery under varying conditions. This film was made with the co-operation of the Department of Physiology of St. Bartholomew's Hospital Medical College. Applications for copies of the films should be made to the Wellcome Film Unit, 183–193, Euston Road, London, N.W.1.

Foreign Scholarships

The British Council has been asked to find candidates for scholarships which are being offered by 14 foreign Governments and universities for the year 1950–1. Most of the scholarships provide for a year's postgraduate study and correspond to scholarships offered by the British Council. Those countries which are continuing schemes already in operation are: Belgium, Czechoslovakia, Denmark, Finland, France, Germany (Universities of Cologne and Münster), Italy, the Netherlands, Norway, Persia (University of Tehran), and Sweden. Three new scholarships, each valued at £640, are offered by Brazil, and the University of Neuchatel, Switzerland, is offering one. The closing date for applications is March 10, and the awards will probably be announced by the beginning of the university summer term. Details of these scholarships are contained in a booklet issued by the British Council and obtainable from the Controller, Education Division, the British Council, 3, Hanover Street, London, W.1.

Society of Analytical Psychology

The new address of the Society of Analytical Psychology is 25, Park Crescent, London, W.1 (telephone : Langham 6108).

Maida Vale Hospital

The war damage sustained by the Maida Vale Hospital for Nervous Diseases has now been partly repaired, and facilities for neurosurgery are again available. The department of electroencephalography has recently been reopened. In addition, the pathological services of the hospital have been greatly extended. The facilities for postgraduate teaching offered by the medical school include not only those specially drawn up for candidates preparing for higher examinations but also a series of clinical demonstrations for practitioners in the North-west Metropolitan Region.

Reading in Bed

At an exhibition recently held by the St. John and Red Cross Hospital Library Department some ingenious devices to help patients read in bed were shown. An American microfilm apparatus projected its picture on to the ceiling above the patient's head as he lay flat in bed. By means of an electric switch, which the patient could work with his chin if necessary, the film could be moved on to display the next page of the book. Apparatus for turning the pages of books by electric switches were also exhibited. The patient can operate them without using his hands or arms, and one was adapted for the use of patients in iron lungs.

Wills

Sir Maurice Alan Cassidy, formerly consulting physician to St. Thomas's Hospital, left £31,142. Dr. John Grimshaw, of Birkenhead, left £27,304 ; Dr. Andrew Gordon Watson, of Bath, £22,897 ; Dr. Edward Sheridan, of Dublin, £22,600 ; Dr. Godfrey William Joseph Baker, of Walsall, Staffs, £21,139 ; Dr. Charles Morton Gavin Elliott, of Portsmouth, £17,148 ; and Dr. Edward Morgan, of North Walsham, Norfolk, £1,675.

COMING EVENTS

British Medical Students Association

The following arrangements have been made for the week February 21–28. *Aberdeen Medical Society.*—February 21 : Lecture by Dr. Neil G. C. Hendry ; February 28 : Lecture by Dr. Mary Esslemont. *Aberdeen Anatomical and Anthropological Society.*—February 21 : Student papers. *Belfast.*—February 24 : Debate on "Should Women Practise Medicine ? " *Durham.*—February 24 : Lecture on "Pathological Pot-pourri," by Dr. John Stewart. *London Hospital.*—February 21 : Lecture on "The Injured Workman," by Sir Hugh Griffiths. *Manchester.*—February 28 : Lecture by Mr. Dickson Wright. *St. Andrews.*—February 24 : Vice-presidential Address by Dr. Douglas G. Anderson. *Sheffield.*—February 24 : Film show.

Institute of Laryngology and Otology

A series of nine lectures on pharmacology as applied to oto-rhino-laryngology will be given by Dr. C. A. Keele at the Institute of Laryngology and Otology, 330–332, Gray's Inn Road, London, W.C., commencing on Monday, February 27. Particulars of dates and times of these lectures may be obtained from the Dean.

Contraceptive Technique

A lecture and demonstration (on living models) on contraceptive technique will be given by Dr. Marie C. Stopes at the Mothers' Clinic, 108, Whitfield Street, London, W., on Wednesday, March 1, at 2.30 p.m. Tickets must be obtained in advance, as space is limited.

Reunion Dinner

The CMF/MEF Physicians Reunion Dinner will be held at Simpson's-in-the-Strand, London, W.C., on Saturday, April 1. Those interested should apply to Dr. Arthur Willcox, 66, Harley Street, London, W.1.

Lecture for Students

Professor J. C. Spence will deliver a lecture on "The Instruments of Clinical Teaching" on Thursday, March 2, at 5.15 p.m. in the Physiology Lecture Theatre, Welsh National School of Medicine. All staff, students, and past students of the medical school will be welcome.

Postgraduate Lectures in Ophthalmology

A series of postgraduate lectures in ophthalmology will be given in the department of ophthalmology of the University of Glasgow on Wednesdays, March 1, 8, 15, 22, and 29, at 8 p.m. A discussion will follow each paper. The meetings are open to all medical practitioners interested in the subject. Details will be published in the *Journal* under "Societies and Lectures" week by week.

Mental Deficiency

A course on educationally subnormal children and mental defectives will be held on two occasions this year by the University of London in co-operation with the National Association for Mental Health. It is intended for medical practitioners, especially those engaged as school medical officers and as certifying officers under the Mental Deficiency Acts. It will be held at the University of London Examination Hall, Imperial Institute Road, South Kensington, on March 13–31 and October 2–20. Students must arrange their own accommodation. The fee is £15. Local health authorities may defray reasonable expenses for sending medical officers on the courses. Full details can be obtained from the National Association for Mental Health, 39, Queen Anne Street, London, W.1.

Laboratory Animals

The Laboratory Animals Bureau is holding a Congress of Animal Attendants on Thursday and Friday, March 30 and 31, at the Royal Veterinary College, Royal College Street, London, N.W.1. On the morning of March 30 there will be a conference to discuss the formation of an Animal Technicians Association. Technical papers will be read on the morning of March 31. On both afternoons there will be a choice between a visit to a biological research laboratory, a programme of scientific films, and a trade exhibition. The congress is open to those, other than university graduates, whose work involves the use, care, and handling of laboratory animals ; it is not restricted to senior animal attendants. Admission will be by ticket, application for which, if not already made, should be addressed to the Director, Laboratory Animals Bureau, Royal Veterinary College, Royal College Street, London, N.W.1.

Congress of Paediatrics

The Sixth International Congress of Paediatrics will be held at Zurich, Switzerland, on July 21–31 under the presidency of Professor G. Fanconi. Participants must register by April 22 with the American Express Company, Inc., Sihlporteplatz 3, Zurich, or their agencies or correspondents in other countries, to whom also applications for hotel accommodation should be made.

Royal Society Lectures

The Bakerian Lecture will be delivered on May 4 by Professor P. W. Bridgman, foreign member R.S., of the Lyman Laboratory of Physics, Harvard University, U.S.A.

The Croonian Lecture will be delivered on June 15 by Professor F. M. Burnet, F.R.S., director of the Walter and Eliza Hall Institute, Melbourne, Australia.

The Ferrier Lecture will be delivered on June 29 by Professor J. Z. Young, F.R.S., professor of anatomy, University College, London.

The first Leeuwenhoeck Lecture, which was founded in 1948 by a bequest from Mr. George Gabb "for an annual lecture in the field of microbiology," will be delivered on November 9 by Sir Paul Fildes, F.R.S.

The Wilkins Lecture will be delivered on December 14 by Professor F. J. Cole, F.R.S., Emeritus Professor of Zoology in the University of Reading.

Day Hospitals and Social Rehabilitation

A conference and discussion on "Day Hospitals and Social Rehabilitation" has been arranged by the Institute of Social Psychiatry to be held at Seymour Hall, Seymour Place, London, W., on Wednesday, March 22, at 2 p.m. The speakers will include Dr. Noel Harris, Dr. Joshua Bierer, Dr. E. B. Strauss, Dr. Donald Blair, Dr. Doris Odlum, and Dr. Desmond O'Neill. Tickets (5s.) may be obtained from the conference organizer at 9, Fellows Road, London, N.W.3.

SOCIETIES AND LECTURES

Monday

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, London, W.—February 20, 8.30 p.m., "*Surgical Aspects of Hyperpiesia*," First Lettsomian Lecture by Mr. A. Dickson Wright.

Tuesday

BRITISH MEDICAL STUDENTS ASSOCIATION: LONDON HOSPITAL BRANCH.—At London Hospital Medical College, Turner Street, Whitechapel, London, E., February 21, 5.30 p.m., "*The Injured Workman*," by Sir Hugh Griffiths.

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—February 21, 5 p.m., "*Lichen Planus and Lichenoid Eruptions*," by Dr. R. M. B. MacKenna.

INSTITUTE OF UROLOGY.—(1) At St. Peter's Hospital, Henrietta Street, Covent Garden, London, W.C., February 21, 3.30 p.m., *X* Rays and Museum Specimens by Mr. R. Ogier Ward: (2) At St. Paul's Hospital, Endell Street, London, W.C., February 21, 5 p.m., "*Injuries of Kidney and Ureter*," by Mr. A. W. Badenoch.

LONDON UNIVERSITY.—At King's College, Strand, London, W.C., February 21, 5.30 p.m., "*The Preservation of Science and Learning*," by Professor J. F. Danielli.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—February 21, 5 p.m., "*Factors Contributing to Safety in Surgery of the Thyroid*," Hunterian Lecture by Professor J. E. Piercy.

UNIVERSITY COLLEGE, Gower Street, London, W.C.—February 21, 5.15 p.m., "*Visual Physiology*," by Dr. L. C. Thomson.

Wednesday

INSTITUTE OF UROLOGY.—(1) At St. Mary, Islington, Hospital, Highgate, N., February 22, 10.30 a.m., Ward Round by Mr. A. C. Morson; (2) At St. Paul's Hospital, Endell Street, London, W.C., February 22, 5 p.m., "*Calculous Disease of Kidney and Ureter*," by Mr. H. P. Winsbury-White.

NORTH EAST LONDON CLINICAL SOCIETY.—At Prince of Wales's General Hospital, London, N., February 22, 8.15 p.m., "*The Problem and Management of Breast Feeding*," by Dr. Harold Waller. Films will be shown.

WESTMINSTER SCHOOL OF MEDICINE, Meyerstein Lecture Theatre, Horseferry Road, London, S.W.—February 22, 5.30 p.m., clinico-pathological meeting, discussion: "*Brucella Abortus Infection in a Case of Bacterial Endocarditis*."

Thursday

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., February 23, (1) 3.30 p.m., *X* Rays and Museum Specimens by Mr. D. I. Williams: (2) 5 p.m., "*Congenital Malformations of Bladder and Urethra*," by Mr. J. E. Semple.

LONDON UNIVERSITY.—At King's College of Household and Social Science, 61, Campden Hill Road, W., February 23, 5.30 p.m., "*Murder*," by Dr. Keith Simpson.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—February 23, 5 p.m., "*Malignant Disease of Thyroid Gland*," Hunterian Lecture by Professor H. L. M. Rouaile.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, London, S.W.—February 23, 4.30 p.m., "*Psychiatry*," lecture-demonstration by Sir Paul Mallinson.

UNIVERSITY COLLEGE, Gower Street, London, W.C.—February 23, 1.15 p.m., "*The Human Thumb*," by Dr. J. Joseph; 4.45 p.m., "*The Peptide Bond in Biochemistry*," by Dr. T. S. G. Jones.

Friday

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., February 24, 5 p.m., "*Calculous Disease of Bladder and Urethra*," by Mr. F. R. Kilpatrick.

KENT AND CANTERBURY HOSPITAL, Canterbury.—February 24, 5 p.m., clinical meeting.

MAIDA VALE HOSPITAL FOR NERVOUS DISEASES, Maida Vale, London, W.—At Medical School, February 24, 5 p.m., Neurological Demonstration by Dr. Anthony Feiling.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos Street, London, W.—February 24, 8 p.m., "*Virus Infections and Venereal Disease*," by Professor S. P. Bedson, F.R.S.

ROYAL MEDICAL SOCIETY, 7, Melbourne Place, Edinburgh.—February 24, 8 p.m., "*The Nature of Cutaneous Sensation*," by Mr. A. Fraser Darling.

APPOINTMENTS

The Minister of Health, Mr. Aneurin Bevan, has appointed the following medical men to the boards of governors of teaching hospitals.—*Royal National Ear, Nose, and Throat Hospital:* Dr. Adam Gray, in succession to Mr. T. H. Lawley. *Middlesex Hospital:* Mr. F. W. Roques, in succession to the late Mr. W. T. Warwick.

BASTER, NORMAN, M.D., D.P.H., Director of Communicable Diseases Service and Director of Rural Health Units, Government of Alberta, Canada.

BINTCLIFFE, E. W., M.B.E., M.S., F.R.C.S., Consultant Orthopaedic Surgeon, Tunbridge Wells and Hastings Group of Hospitals.

BURTON-BROWN, JEAN R. C., M.D., F.R.C.S., M.R.C.O.G., Consultant Obstetrician and Gynaecologist in Canterbury and Isle of Thanet Area, South-East Metropolitan Regional Hospital Board.

DAVEY, WM. W., M.D., F.R.C.S., F.R.C.S.I., Consultant Surgeon, Whittington Hospital (Gastric Unit), Highgate, London, N.

EAST ANGLIAN REGIONAL HOSPITAL BOARD.—*Consultant Chest Physician in West Suffolk Area*, C. P. Hay, M.D., M.R.C.P., D.P.H. *Consultant Physician in Norfolk and Norwich Area*, J. A. Campbell, M.R.C.P., D.T.M.&H. *Consultant Psychiatrist and Medical Superintendent, St. Audry's Hospital*, I. J. Davies, M.D., D.P.M.

GRIFFITH, J. LI., M.B., B.Chir., F.R.C.S.Ed., Consultant Thoracic Surgeon in Devon and Cornwall Area, South-Western Regional Hospital Board.

RACKOW, F. I., M.B., M.R.C.P., Senior Medical Registrar, St. Andrew's Hospital, Devons Road, London, E.

SPENCER, ARTHUR M., M.B., D.P.M., Medical Superintendent, Powick Mental Hospital, Worcester.

THOMSON, W. N., M.B., Ch.B., D.M.R.D., Assistant Radiologist, Guy's Hospital, London, S.E.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Boal.—On February 6, 1950, at Winn House, 116, Highfield Lane, Southampton, to Elspeth, wife of Dr. R. Basil Boal, a daughter.

Fletcher.—On February 8, 1950, in Manchester, to the wife of Dr. Frank Fletcher, a son.

Heatley.—On January 23, 1950, at The Hazels, Old Marston, Oxford, to Mercy Heatley, B.M. B.Ch. (née Bing), wife of Norman Heatley, a brother for Rose.

MARRIAGES

Thomasson—MacAuliffe.—On February 1, 1950, at the University Church, Dublin, Ronald Arthur Thomasson, L.D.S., to Rose MacAuliffe, M.B., B.Ch.

DEATHS

Alkan.—On February 3, 1950, Reinhold Alkan, M.D., of 23, Sneath Avenue, London, N.W.

Badcock.—On January 29, 1950, at The Brown Cottage, Haywards Heath, Sussex, Charles Halford Badcock, M.R.C.S., L.R.C.P., formerly of Croxted Road, Dulwich, S.E., aged 77.

Bailey.—On February 4, 1950, at Oakhurst, Midhurst, Sussex, Bernard Edward Granville Bailey, M.R.C.S., L.R.C.P., aged 76.

Boswell.—On February 7, 1950, at his home at The Priory, Badingham, Suffolk, Dudley William Boswell, T.D., M.D., D.P.H., late of Lowestoft, aged 68.

Brown.—On October 20, 1949, Arthur James Brown, D.S.O., M.R.C.S., L.R.C.P., Wing Commander, R.A.F., Ret.

Clark.—On February 8, 1950, at his home, Fairway, Broadwater Green, Worthing, Oliver Patrick Clark, L.M.S.S.A., L.R.C.S.Ed., aged 53.

Clough.—On February 6, 1950, at Redbrook, Whitchurch, Salop, Alfred Hollies Clough, M.R.C.S., L.R.C.P.

Crook.—On January 27, 1950, at 55, St. Andrews Road, Ilford, Essex, Arthur Crook, M.R.C.S., L.R.C.P., late of Norwich.

Curtis.—On February 4, 1950, at Naivasha, Kenya, Percy James Curtis, M.R.C.S., L.R.C.P.

Ewing.—On February 11, 1950, at 103, Delamere Road, Ealing, London, W., John Ewing, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., late of Saxonia, Strandtown, Belfast.

Frazer-Nash.—On February 8, 1950, at Ardna, Kingston Hill, Surrey, Mrs. Lilias Frazer-Nash, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., aged 90.

Gange.—On January 28, 1950, at 40, Court Street, Faversham, Frederick Whitechurch Gange, M.D.

Hart.—On February 7, 1950, at Derby General Hospital, Arthur Edward Hart, M.B., B.Ch., late of 26, Carr Lane, Willerby, Hull, aged 84.

Healey.—On February 3, 1950, at Kenmore Lodge, College Avenue, Rhos-on-Sea, Colwyn Bay, John Healey, M.B., Ch.B., late of Mossley, Manchester, aged 80.

Horsburgh.—On January 30, 1950, Percy Gilbert Horsburgh, G.M., M.R.C.S., L.R.C.P., D.P.H., of 34, Bulkington Lane, Nuneaton, Warwicks, aged 57.

Hosford.—On January 28, 1950, Thomas Henry Hosford, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., of 225, Camden Road, London, N.W., aged 82.

Jackson.—On February 6, 1950, at 515, Burnley Lane, Chadderton, Lancs, Robert Ashton Jackson, M.B., Ch.B., J.P., aged 63.

Mansfield.—On February 1, 1950, at Suffolk Lodge, Sevenoaks, Kent, Perceval Aubertin Mansfield, M.B., B.Ch., aged 71.

Martin.—On January 30, 1950, at Kirkby Lonsdale, Westmorland, Ernest Jackson Martin, M.B., Ch.B.

Miller.—On February 1, 1950, at 23, Monreith Road, Glasgow, Janet Thomson Miller, M.B., Ch.B.

Parsons.—On February 2, 1950, at 1, Laswade Road, Edinburgh, James William Arthur Parsons, M.B.E., L.R.C.P.&S.Ed., L.R.F.P.S.Glas.

Patch.—On February 4, 1950, at St. Richard's Hospital, Chichester, Burnet Graham Patch, M.R.C.S., L.R.C.P., Lieutenant-Colonel, R.A.M.C., Ret., aged 74.

Stewart.—On January 27, 1950, Francis Stewart, M.B., Ch.B., of Glasgow, aged 24.

Sykes.—On December 18, 1949, at his home, 73, York Road, Birkdale, Southport, John Herbert Sykes, M.D.

Williams.—On January 29, 1950, at Countisbury, Ashurst Drive, Goring-by-Sea, Sussex, Harry Bowen Williams, M.D., aged 80.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Like Father, Like Son

Q.—*Are there any modern figures to support Galton's finding that regression towards a mean occurred in subsequent generations in man? Galton found that the sons of tall parents were tall, but not so tall as the parents, on the average. Since his day there must have been millions of observations made on soldiers and for life assurance purposes. Has any analysis of these figures been made from the point of view of regression, and, if so, does it support the view that evolution is proceeding in man?*

A.—Galton's observations on regression to the mean of the population have not only been amply confirmed but the phenomenon is now seen to be a necessary consequence of the Mendelian multifactorial inheritance of continuously distributed characteristics, such as stature. The term does not mean that the average for the population is necessarily changing or that the variability of the population is changing; in fact, unless there are influences at work making for a change in one direction or the other both will remain constant from generation to generation. What it does mean is that parents who diverge from the population mean will on the average have children nearer to the mean than they are themselves. Thus, if the mean height of men is 5 ft. 8 in., men of 6 ft. will on the average have sons of about 5 ft. 10 in.; similarly, fathers of 5 ft. 4 in. will have sons who average about 5 ft. 6 in. A striking example in another field is provided by Terman's group of highly gifted children, as described in successive volumes of *Genetic Studies of Genius*. These subjects had as children an average Binet I.Q. of about 150; their children have a mean I.Q. of 127. But, of course, the phenomenon works both ways: tall, or gifted, sons have fathers who on the average are about half-way between the population mean and themselves.

The apparent paradox can be easily explained without recourse to mathematics. The tallest 1% of men will undoubtedly have sons who are taller on the average than the sons of any other men, but they cannot be the parents of *all* the tallest 1% in the next generation; hence the sons will be shorter than their fathers on the average. In just the same way the tallest 1% of men cannot have fathers as tall as themselves on the average. In the field of intelligence the fact of regression has undoubtedly caused much trouble. In spite of his high intellectual gifts the very clever man is apt to conclude thoughtlessly that his son is almost an idiot because, say, he does not instantly comprehend the principles of the integral calculus. Actually, any gifted man whose children are above a point half-way between himself and the mean of the general population should consider himself fortunate. (The figure of about one-half for the regression is approximately true for many measurable characters.) The phenomenon of regression taken in isolation does not provide evidence of whether or not evolution is occurring in man, but it is part of the scheme of inheritance and variation which provides a basis for change due to the action of selection.

Teropterin in the Treatment of Cancer

Q.—*What is the current opinion on the value of pteroyltriglutamic acid (teropterin) in the treatment of metastases from carcinoma of the breast?*

A.—A report on the use of teropterin in the treatment of cancer was given by the Council on Pharmacy and Chemistry of the American Medical Association (see *J. Amer. med. Ass.*, 1948, **137**, 699). After a review of the earlier papers on the subject this report summarizes information made available by the manufacturer. In many accounts, objective improvements in the patient's condition have been reported—for example, changes of appetite and weight—and emphasis has also been laid on the reported analgesic action of teropterin. So far as concerns any possible action of this substance on tumours and their metastases, no change is noted in either the primary tumour or metastatic deposits in over 80% of cases. While regression of lesions has been reported in a small proportion, it should be noted that many of the cases were receiving or had received other forms of treatment, such as radium or *x*-ray therapy. There seems little to support the claim that teropterin has any noteworthy or specific action upon cancer. In cases which have come to necropsy no significant effects have been noted which could be attributed to the drug.

Pre-operative Treatment of Toxic Goitre

Q.—*What is the generally recognized method of preparing patients with toxic goitre for operation? Is it true that thiouracil increases the vascularity of the gland, which may cause difficulties at operation?*

A.—Practice in the preparation for operation of patients with toxic goitre varies in different centres; it is doubtful whether a "generally recognized" method can be said to exist. The effect of thiouracil is to increase the vascularity of the thyroid gland, and this change may make it difficult to secure meticulous haemostasis at operation. The pre-operative administration of iodine hardens the gland and reduces its vascularity, thus facilitating the surgeon's work. If preliminary "detoxication" with thiouracil is considered desirable, this drug, in the form of its methyl or propyl compound, is given in doses of 200–400 mg. daily. Thyrotoxic symptoms begin to come under control in three or four weeks, and, as normality is approached, the dose can be reduced to 50 mg., or even to 25 mg., daily. Operation can be undertaken at leisure when the signs of thyrotoxicosis have disappeared, a period which may vary from one to two months. Thiouracil should be withheld for twenty-one days before operation, and for the last fourteen of them iodine should be given in doses of 5–10 min. (0.3–0.6 ml.) of Lugol's solution, three times daily. The principles of this method of preparation are generally accepted, although the details of timing and dosage vary considerably in different clinics.

T.A.B. Inoculation

Q.—*Does the ordinary T.A.B. vaccine provide protection against any Salmonella other than Salm. typhi and Salm. paratyphi A and B, and, in particular, will it give any protection against infection by Salm. paratyphi C?*

A.—T.A.B. vaccine gives a considerable degree of protection against infection with *Salm. typhi* or *Salm. paratyphi A* or *B*, but not against *Salm. paratyphi C*. The O antigens, which are presumably the most important fractions in the production of protective antibody, are different in *Salm. paratyphi C* from those in each of the three other organisms, which, however, share some common O antigens. If protection against *Salm. paratyphi C* is desired this organism should therefore be added to the other three; combined T.A.B.C. vaccine is available commercially. The O antigen of *Salm. paratyphi B* is shared with a number of the food-poisoning Salmonella organisms, such as *Salm. typhi-murium*, while the O antigen of *Salm. typhi* is practically identical with that of *Salm. enteritidis*. It may be, therefore, that inoculation with T.A.B. vaccine gives some protection against infection with antigenically similar Salmonella bacteria, although there seems to be no conclusive evidence on this point.

Hepatic Cirrhosis

Q.—*What is the treatment of non-alcoholic cirrhosis of the liver? Are vitamin preparations useful?*

A.—There are no essential differences between the management of "alcoholic" and other types of hepatic cirrhosis. The aims of treatment are to arrest, and if possible reverse, the changes in the liver, and to encourage regeneration of any remaining normal cells. It is impossible to do more here than indicate the main principles; the current textbooks should be consulted for the details of therapy. The first essential is a

nutritious diet, with liberal allowances of protein and carbohydrate. A satisfactory daily dietary would consist of carbohydrate 350–450 g., protein 120 g., and fat 80 g., although much larger quantities of protein and carbohydrate have been given. Large supplements of all the vitamins, and particularly of those of the B group, should be given, and the substances containing growth-promoting factors, such as yeast and liver extract, are of special importance. The lipotropic factors, choline and methionine in doses of 1.5–3 g. three times daily, favour the restoration of normal hepatic structure. Striking claims have recently been made for the intravenous use of liver extract in large doses. Further details on these fundamental aspects of therapy can be found in the papers of Patek (*Proc. Soc. exp. Biol., N.Y.*, 1937, **37**, 329; *J. clin. Invest.*, 1941, **20**, 481; *J. Amer. med. Ass.*, 1948, **138**, 543); of Morrison (*Ann. intern. Med.*, 1946, **24**, 465; *J. Amer. med. Ass.*, 1947, **134**, 673); and of Ralli (*Medicine*, 1949, **28**, 301). The transfusion of blood, plasma, or serum albumin may be of great value when early failure of the liver's metabolic activities has begun to lead to hypoproteinaemia and anaemia. Operative measures to reduce portal hypertension are seldom justifiable in hepatic cirrhosis because they carry such a high mortality.

Contraindication to Gas-and-air Analgesia

Q.—*Could you define the contraindications to the use of gas-and-air analgesia in midwifery? This is a country practice where the only alternative is open chloroform. The case I have in mind is a nervous multipara who has a variable degree of dyspnoea on exertion and slight impairment of exercise tolerance, but no other signs or symptoms apart from functional tachycardia on examination.*

A.—The contraindications to the use of gas-and-air analgesia in midwifery are best defined as any condition which interferes with the oxygenation of the blood, or produces a raised blood pressure. Cardiac disease, respiratory affections, and toxaemia of pregnancy would therefore require special medical supervision. A nervous multipara showing functional symptoms, and without organic disease, should be much benefited by gas-and-air analgesia after antenatal tuition, which is of such importance in all cases for eliminating fear and for educating the patient in the proper use of the method.

Paget's Disease

Q.—(*1*) *What cardiovascular changes are associated with Paget's disease, and are they part of the disease itself?* (*2*) *Is the raised blood pressure primary or secondary?* (*3*) *In the absence of intercurrent disease, on what factors does the expectation of life depend? Is it possible to state it roughly?* (*4*) *Is there any known effective form of treatment?*

A.—There are no cardiovascular changes specifically associated with Paget's disease. But since Paget's disease occurs usually in persons over 40 years of age it may be present, coincidentally, with any of the common degenerative cardiovascular diseases. Similarly, Paget's disease does not itself cause elevation of the blood pressure, though the two conditions may coexist. Uncomplicated Paget's disease does not influence the expectation of life, but it may shorten life indirectly. Thus fracture or gross deformity of a diseased bone may lead to severe crippling, with increased liability to intercurrent disease. Secondly, bone sarcoma is a well recognized, though uncommon, complication (its incidence has not been established with certainty, but it is probably less than 2%). No effective treatment for Paget's disease is known.

Incontinence in the Aged

Q.—*What is the best treatment for incontinence in old bedridden patients? What are the indications for cystometry, and is it of value?*

A.—Incontinence in bedridden patients cannot be considered as a single problem, because there are many different causes. Improvement of the condition can only result from treatment based on the finding in each individual case. For example, there will be a group in which infection of the bladder is the cause of the incontinence, another group in which enlargement of the prostate may be the explanation, and a third group in which the central nervous system is at fault. Cystometry is not a measure that will give much help. Cases of this sort require a great deal of investigation, usually in hospital, and, speaking generally, they do not respond very favourably to treatment.

Sprue and Sulphaguanidine

Q.—*Is it possible to produce "non-tropical sprue" (idiopathic steatorrhoea) in human beings which in turn will produce a vitamin-B-complex deficiency? I gave 700 tablets of sulphaguanidine (0.5 g.) in a four-months course to a patient who developed typical non-tropical sprue with marked vitamin-B-complex deficiency. Was this patient suffering from sprue before I started the treatment with sulphaguanidine?*

A.—It is possible to induce some of the characteristics of the sprue syndrome in otherwise normal human subjects by various means. There is no evidence, however, that this can be done by the administration of sulphaguanidine. There is, in fact, some evidence to the contrary. It seems most likely that the case reported was one of sprue in the first place. The various signs and symptoms comprising the sprue syndrome vary from time to time in intensity, so that it is not at all certain that any connexion exists in this case even between the administration of the sulphaguanidine and the apparent aggravation of the condition.

Anemone Contact Dermatitis

Q.—*The picking of anemones, which are grown fairly extensively round Penzance, will soon be under way. This work produces a very painful condition of the fingers. What is this, and can you suggest any buffer solution or other measure of protection?*

A.—This is probably a contact dermatitis from specific sensitization to juices from leaves and stems. Attempts at desensitization in cases of plant dermatitis by local application, by ingestion, and by injection of extracts have been attended with little success, and that only temporary—the procedure having to be repeated each season. Such measures are not free from danger, and are generally regarded as undesirable. Strict cleanliness, the wearing of gloves, and the use of good barrier creams may afford some little protection. Reference should be made to the reply in this part of the *Journal* to a question on "Sensitivity to Primula" (August 16, 1947, p. 282), and to a report by F. A. Stevens in the *Journal of the American Medical Association* (1945, **127**, 912) on the problem of poison ivy sensitization in America.

NOTES AND COMMENTS

Survival of the Flea.—Mr. G. C. Adeney (Ditchling, Sussex) writes: Germane to the above ("Any Questions?" December 24, 1949, p. 1484), when on Lemnos in 1915 I entered a semi-ruined building, wearing shorts. Upstairs, while looking out of the landing window, I became aware of a gentle sizzling sound at my feet and a tickling of my legs. Looking down I was startled to see an uncountable number of fleas hopping all over the bare skin, and on the floor among a heap of dried sticks were masses of these fleas ceaselessly active. The building had the appearance of having been deserted for many years. What were the insects living on? Had they propagated in lieu of feeding? And had the last meal been so long past that the present generation had lost the instinct to feed, for I was not bitten once?

Correction.—We are informed that owing to devaluation the price of the second edition of Volumes 1 and 2 of Campbell's *Operative Orthopedics* is £10 10s., and not £7 10s. as stated in the review published in our issue of February 11 (p. 354).

All communications with regard to editorial business should be addressed to The Editor, British Medical Journal, B.M.A. House, Tavistock Square, London, W.C.1. Telephone: Euston 2111. Telegrams: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone.
Authors desiring REPRINTS should communicate with the Publishing Manager, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs.
ADVERTISEMENTS should be addressed to the Advertisement Manager, B.M.A. House, Tavistock Square, London, W.C.1 (hours 9 a.m. to 5 p.m.). Telephone: Euston 2111. Telegrams: *Britmedads, Westcent, London.*
MEMBERS' SUBSCRIPTIONS should be sent to the SECRETARY of the Association. Telephone: Euston 2111. Telegrams: *Medisecra, Westcent, London.*
B.M.A. Scottish Office: 7, Drumsheugh Gardens, Edinburgh.